U.S. Bur. of Biological Survey

WILDLIFE REVIEW

OHIO STATE UNIVERSITY
AUG 16 1954
LIBRARY

NUMBER 76 MAY 1954

UNITED STATES DEPARTMENT OF THE INTERIOR

FISH AND WILDLIFE SERVICE

WILDLIFE REVIEW

An abstracting service for wildlife management
Issued for the information of cooperators
by the Fish and Wildlife Service
United States Department of the Interior

May 1954 Patuxent Research Refuge, Laurel, Maryland No. 76

The printing of this publication has been approved
by the Director of the Bureau of the Budget, Aug. 19, 1952.

CONTENTS

	Page
Wildlife	
New state game journals	2
Bibliography, biography, history	2
Education	3
Techniques	5
Biometrics	6
Economic and other values	7
Natural areas and refuges	8
Morphology, physiology, behavior, migration	9
Biotas, communities, general ecology	10
Numbers and number fluctuations	13
Parasites and diseases	13
Mortality from insecticides, weather, cars, etc.	14
Management	
General	15
Harvests and hunting	17
Farm	19
Forest and range	20
Wet-land	22
Predation, crop damage, and control	23
Reports of organizations	24
Mammals	
General	26
Faunas and manuals	27
Communities, numbers, home ranges	28
Parasites and diseases	28
Control, mortality	29
Shrews, moles, bats	30
Rabbits and pikas	31
Rodents	
Miscellaneous	33
Rattus and Mus	35
Sciurids	36
Beaver	37
Muskrat and nutria	39
Furbearers--General	40
Mammals--continued	
Carnivores	
Bears	41
Raccoon and ringtail	41
Mustelids	43
Dogs, wolves, foxes	44
Cats	45
Big Game	
General	46
Hoofed (except deer)	47
Deer	50
Marine	54
Other groups	56
Birds	
General	57
Morphology, physiology, behavior, migration	58
Manuals, faunas, communities	60
Control, mortality	61
Upland game	
Quail	62
Pheasants	63
Grouse, partridge, etc.	65
Turkey	68
Doves and pigeons	68
Waterfowl	69
Cranes, rails, shorebirds	76
Other birds	77
Reptiles and amphibians	79
Fishes	82
Invertebrates	83
Vegetation	
General, ecology, control, techniques	84
Floras and communities	84
Forest	85
Pasture and range	86
Wet-land	86
General conservation, water, and climate	87
Soils	89
Translations of Russian wildlife literature	90
Author index	100

Except as indicated, abstracts are by William H. Stickel, editor.

WILDLIFE--NEW STATE GAME JOURNALS

NEVADA FISH AND GAME. Published monthly by Nevada Fish & Game Commission, Box 678, Reno, Nevada. Vol. 1, no. 1, 1-16 p., illus., Jan. 1954.

NEW YORK FISH AND GAME JOURNAL. Published semiannually by New York Conservation Department, Albany 1, N. Y. Vol. 1, no. 1, 1-117 p., illus., Jan. 1954. $1.50 per year; free to official conservation organizations.

Like California Fish and Game, this journal will carry only research reports. Publication of the more popular series, The New York State Conservationist, will continue.

SOUTH CAROLINA WILDLIFE. Published quarterly by South Carolina Wildlife Resources Department, 1015 Main Street, Columbia, S. C. Vol. 1, no. 1, 1-28 p., illus., Winter 1954.

WILDLIFE--BIBLIOGRAPHY, BIOGRAPHY, HISTORY

Anonymous. COOPERATIVE WILDLIFE RESEARCH UNIT PUBLICATIONS, 1953. U. S. Fish & Wildlife Service. 19 unnumbered p. Duplicator process. No date. [1954.]

Publications are listed by unit, then by author. The introduction points out that there are still too many unpublished or unpublishable theses. [In at least one unit, publishability is deliberately subordinated to broad, general experience for the student.]

Barker, Elliott S. BEATTY'S CABIN. University of New Mexico Press. 220 p., illus. 1953. $4.50. [From review by A. S. Leopold, Pacific Discovery 6(5).]

Reminiscences of the former State Game Warden of N. M., "who was fortunate enough to have grown up in the upper Pecos of central New Mexico--as lovely a piece of country as exists in the West... The story includes the early history of the region, the development of the Forest Service program (culminating in reservation of the Pecos Wilderness Area), hunting and fishing tales, an account of efforts in wildlife conservation, and numerous incidents and happenings in the lives of the men and women who have lived, worked, and played there."

Dana, Samuel T., editor. (U. Mich.) HISTORY OF ACTIVITIES IN THE FIELD OF NATURAL RESOURCES, UNIVERSITY OF MICHIGAN. University of Michigan Press. xii + 353 p., illus. 1953.

"The aim of this publication is to record developments at the University of Michigan in the field of natural resources, and to present some of the major contributions of the alumni to progress in the field." Detailed history of Dept. of Forestry and its growth into present School of Natural Resources, with much information on faculty and alumni. Despite the title, resource work in other branches of the university is not discussed.

Gates, F. C., committee chairman, and others. ECOLOGY / THIRTY YEAR INDEX / (VOLUMES 1-30, 1920-1949). Ecological Society of America. vi + 212 p. 1952. $4.00, paper. (Order from H. J. Oosting, Box 6875, College Station, Durham, N. C. Make checks payable to Ecological Society of America.)

Fine, detailed index to a journal that is of considerable importance in wildlife biology.

Hale, James B., editor. (Wis. Cons. Dept.) A BIBLIOGRAPHY OF WISCONSIN PITTMAN-ROBERTSON STUDIES. Wisconsin Conservation Department. 1-11 p., mimeo. 1954.

Classified list of 153 papers, with full references. Thought to be complete to Jan. 1, 1954.

WILDLIFE--BIBLIOGRAPHY, BIOGRAPHY, HISTORY--Continued

Ingram, William M. HANDBOOK OF SELECTED BIOLOGICAL REFERENCES ON WATER POLLUTION CONTROL, SEWAGE TREATMENT, WATER TREATMENT. U. S. Public Health Service Publication no. 214. Public Health Bibliography Series, no. 8. x + 66 p., illus. 1953. 30¢ from Superintendent of Documents.
Includes a section of 36 references on toxic algae, and another of 9 references on the effect of algae- and weed-control agents on fish.

Ingram, William M., and Peter Doudoroff. PUBLICATIONS ON INDUSTRIAL WASTES RELATING TO FISH AND OYSTERS / A SELECTED BIBLIOGRAPHY. U. S. Public Health Service Publication no. 270. Public Health Bibliography Series, no. 10. i + 28 p. June 1953. 15¢ from Superintendent of Documents.

Limstrom, G. A. A BIBLIOGRAPHY OF STRIP-MINE RECLAMATION. U. S. Forest Service, Central States Forest Experiment Station (Columbus 15, Ohio), Miscellaneous Release no. 8. 1-25 p. Dec. 1953.
Includes titles on soils, forestry, wildlife, ecology, etc.

Michigan Department of Conservation. PUBLICATIONS CATALOG. 6 p. July 1953 revision. [From Monthly Checklist of State Publications 45(2).]

Palmer, T. S. (1939 Biltmore St. N.W., Wash. D. C.) IN MEMORIAM: CLINTON HART MERRIAM. Auk 71(2): 130-136, portrait. April 1954.
Biographical sketch, by a man who knew him well, of one of the chief founders of the Biological Survey.

Stratton, G. Burder, editor. THE ZOOLOGICAL RECORD. VOL. 88. BEING THE RECORDS OF ZOOLOGICAL LITERATURE RELATING CHIEFLY TO THE YEAR 1951. Zoological Society of London. vi + 592. 1953. 120 s.
Probably the most useful bibliographic work in zoology. Wildlife biologists find much of value in it, particularly in the sections on birds and mammals. All sections are cross-indexed and may be purchased separately. For further comments on this series see WR 73:2.

Tremaine, Marie, editor. ARCTIC BIBLIOGRAPHY / PREPARED FOR AND IN COOPERATION WITH THE DEPARTMENT OF DEFENSE UNDER THE DIRECTION OF THE ARCTIC INSTITUTE OF NORTH AMERICA. U. S. Department of Defense. 3 vols., 1478 p., map. 1953. $12.75 per set (sets only) from Superintendent of Documents.
Impressive and important bibliography of 20,003 references that deal with a wide variety of topics. References from all countries, of course, are included. The first 2 volumes list books and articles alphabetically by author, almost always with good description or abstract of contents. The third volume is devoted to an elaborate cross-index in which material is indexed by topic, locality, expedition, etc. The index contains a full page (2 columns) of entries on musk ox, a full page on caribou, and about a column on ptarmigan. The bulk of the references, of course, pertain to such subjects as soils, weather, harbors, geology, geography, and plants, but many pertain to animals. Index break-downs under localities, as "Aleutian Islands--Birds," should be most helpful.

WILDLIFE--EDUCATION

Anonymous. CAREERS IN FORESTRY AND WILDLIFE CONSERVATION. University of Maine. 12 p., illus. 1953. [From Journal of Forestry 52(3).]

Anonymous. COOPERATIVE WILDLIFE RESEARCH UNIT STATISTICS, 1953. U. S. Fish & Wildlife Service. 17 + 4 p. Duplicator process. No date. [1954.]
Number of bachelors', masters', and doctors' degrees granted each year 1949-53; present employment status and fields of employment of 1952-53 graduates; list, by unit, of projects now under study; list of topics and units studying them. It is of interest that number of graduates in 1952-53 declined for third consecutive year.

WILDLIFE--EDUCATION--Continued

Dodge, John E. (N. H. Game Dept.) EDUCATION TOOLS FOR TRAINING IN-SERVICE PERSONNEL. Trans. 18th N. Amer. Wildl. Conf. 638-645 p. 1953.
How N. H. organized a training workshop for conservation officers. The officers themselves were given chief responsibility for planning, programming, and running the meetings. Officer interest was keen and results were highly satisfactory. Experts and even antagonists were called in to give their views.

Gordon, Eva L., and others. OUTDOOR NATURE STUDIES. Cornell Rural School Leaflet 47(1): 1-64, illus. Fall 1953.
Useful guide for teachers. Many types of studies are treated. Emphasis is on helping children discover and learn for themselves rather than being force-fed.

Hadland, George S. (Wis. Cons. Dept.) EFFECTIVE USE OF CONSERVATION EDUCATION BY THE LAW ENFORCEMENT OFFICER. Trans. 18th N. Amer. Wildl. Conf. 646-649 p. 1953.
A large part of the work of Wis. conservation officers is educational, especially with youth groups and young violators. This paper tells how the system works. It is considered better to prevent violations through education and good public relations than to depend on arrests after violations occur.

Huber, William W. (U. S. Forest Service, Portland, Ore.) CONSERVATION EDUCATION--THE KEY TO RESOURCE MANAGEMENT. Trans. 18th N. Amer. Wildl. Conf. 631-636 p. 1953.
College students in conservation should get more training in practical problems and public relations. Too many professors and students are concerned with trivial, impractical problems while scores of vital problems demand attention. Some men are naturally fitted for research, others for operations or administration. Their tendencies should be recognized early in college and their training modified accordingly. New employees should be dropped quickly if they do not fit in--and one thing they should fit into is public relations. Colleges should be sure students of some phase of conservation get sound background in the other phases. Various methods by which agencies can get their messages to the public are outlined.

Kaikow, Julius. THE LEGAL AND ADMINISTRATION STATUS OF CONSERVATION EDUCATION IN THE UNITED STATES. PhD thesis, Columbia University. 694 p. 1953. [From Dissertation Abstracts 14(1).]
Based on survey of conservation education in states and territories. Only 10 states require such education and only 25 states and 1 territory have any policy concerning it. Nonrenewable resources are usually slighted. "...a balanced presentation of all important resources is rare. Ecological considerations, where man and his activities fit into such considerations, is even more rare. A high percentage of the material presented as conservation would more appropriately fit into the category of nature study. The relation of modern industry and technology to conservation of resources is largely lost sight of. More than a small part of the conservation instruction is based on emotional appeal rather than on reason. ...Insufficient difference exists between the conservation instruction in rural and urban schools. Such instruction is geared largely to the comprehensions and backgrounds of rural children."

Lively, Charles E. (U. Mo.) THE SOCIAL SIDE OF CONSERVATION--SOME REFLECTIONS ON THE CONSERVATION MOVEMENT. Trans. 18th N. Amer. Wildl. Conf. 36-43 p. 1953.
A plea for a more postive approach in conservation education and some new attitudes in conservation thinking. "The principle of ego-involvement should be employed to the limit. In other words, interest them and help them to help themselves."

WILDLIFE--EDUCATION--Continued

Marshall, Ethel. (Ala. Coll., Montevallo, Ala.) THE INFLUENCE OF WOMEN'S ORGANIZATIONS ON CONSERVATION EDUCATION. Trans. 18th N. Amer. Wildl. Conf. 651-658 p. 1953.

Numerous examples of how women's groups have advanced conservation education and have backed good legislation. One of their main activities has been to increase and improve teaching of conservation in local schools.

McCabe, Robert A. (U. Wis.) TRAINING FOR WILDLIFE MANAGEMENT. Journal of Wildlife Management 18(2): 145-149. April 1954.

In the first part of this paper McCabe stresses the ecological and ethical philosophy that wildlife biologists should have. In the second part he takes up academic standards. He does not approve of bachelor's degrees in wildlife, believing that undergraduate work should be broad and basic, with ample attention to writing and speaking. Master's work should result in a worthwhile, publishable contribution. The Ph.D. candidate, to quote Bennitt, "Should perform the most original, fundamental and highly technical work of which he is capable, leaving purely descriptive research largely to others." To sum up, McCabe seems to imply that too many rule-of-thumb technicians who are deficient in insight are being produced.

Saults, Dan. (Mo. Cons. Comm.) NOT JUST WHAT: WHY? Trans. 18th N. Amer. Wildl. Conf. 624-628 p. 1953.

Most of our so-called conservation education is stereotyped, non-ecological, unpopular, ineffective, and little more than advertising for the agency. We need to put out material the public will want and understand and which will convey sound views on basic topics. Some highly successful films and publications from Mo. are cited.

Swift, Ernest. (US F&WS.) EDUCATION, THE SHARPEST TOOL FOR CONSERVATION OF RESOURCES. North Dakota Outdoors 16(8): 4-5, 18, illus. Feb. 1954. [Also published in other journals.]

This paper, delivered at the Annual Convention of the Outdoor Writers of America, is a forceful, outspoken statement of how poorly the conservation movement is doing, how far most people now are from nature, and how outdoor writers can perform a great service by presenting basic conservation instead of giving their readers a steady diet of hunting and fishing stories. The author maintains that basic conservation can be presented interestingly enough to have sales appeal if a writer knows his business.

Weaver, Howard E. (Tex. A & M Coll.) CONSERVATION EDUCATION WORKSHOPS--A MEANS TO BETTER RESOURCE USE. Trans. 18th N. Amer. Wildl. Conf. 659-664 p. 1953.

Few teachers know much about resources, natural history or ecology. Some are apathetic toward them. Workshops make it possible to correct these deficiencies and to give working knowledge of how to teach conservation. The author tells how workshops can be operated most effectively and how professional men can most efficiently be used as consultants.

Wilson, Chester S. (Minn. Dept. Cons.) ALL-OUT EDUCATION FOR ALL-OUT CONSERVATION. Trans. 18th N. Amer. Wildl. Conf. 617-623 p. 1953.

Need and recommended plans and organization.

WILDLIFE--TECHNIQUES

Moore, Clifford B. (Forest Park Mus., Springfield, Mass.) THE BOOK OF WILD PETS / BEING A DISCUSSION ON THE CARE AND FEEDING OF OUR NATIVE WILDLIFE IN CAPTIVITY, TOGETHER WITH NOTES ON THEIR IDENTIFICATION AND LIFE HABITS. Charles T. Branford Co., Boston. xii + 553 p., illus. 1937, reprinted 1954. $5.95.

Biologists and librarians are often asked how to take care of unusual pets or to recommend a good book on the subject. Moore's book has long been one of the most popular and detailed of its type. It is readable as well as

WILDLIFE--TECHNIQUES--Continued

informative, and is suitable for either children or adults. It covers a surprisingly wide assortment of animals, from insects and spiders of many kinds up through mammals and game birds. Aquaria and terraria are treated at length. The same publishers who recently reissued Seton's "Lives" have now brought out a well-bound offset reproduction of Moore's volume. Material on treatment of disease is, of course, largely out of date, but the layman is not likely to be working with modern prescription drugs anyway. Much of the information in the book is as sound as it ever was, and all of it is based on practical experience of Moore or one of his technical consultants. If you want to know how to keep ant-lions, leeches, mudpuppies, corn snakes, moles, or crows, Moore's book is one of the first references you will want to consult.

Robertson, Jos. H. (U. Nevada.) A LOW-COST PORTABLE CAGE FOR RANGE AND PASTURE PLOTS. Journal of Range Management 7(1): 42, illus. Jan. 1954.
Igloo-shaped wire exclosures for circular sample plots of 9.6 square feet. They can be nested for handling and are light in weight. Cost is about $1.50 each.

Rowland, John B. (U. S. Geol. Survey, Sacramento, Calif.) SCRIBING AS A SUBSTITUTE FOR DRAFTING IN THE PREPARATION OF MAPS FOR REPRODUCTION. Science 119(3088): 330-331. March 5, 1954.
Describes "A new technique of drafting with special tools on coated plastic, known as scribing," which "is rapidly supplanting pen-and-ink drafting in the final stages of map production...the new method produces a more legible map with neater and sharper line-work in a shorter time and at less cost."

Thornton, Philip L. AN AID FOR STEREO DOT COUNTING ON AERIAL PHOTOS. U. S. Forest Service, Central States Forest Experiment Station (Columbus 15, Ohio), Station Notes no. 84. 2 p., illus. April 1954.

WILDLIFE--BIOMETRICS

Bross, Irwin J., and Marie M. Delaney. (Johns Hopkins School Public Health.) SIGNIFICANCE TESTS FOR CERTAIN 2 X 2 TABLES. American Journal of Hygiene 55(3): 357-362. May 1952.
"Tests are presented here which apply only to 2 x 2 tables having small expected numbers and an equal number in the two test groups."

Davis, David E., and Calvin Zippin. (Johns Hopkins School of Public Health.) PLANNING WILDLIFE EXPERIMENTS INVOLVING PERCENTAGES. Journal of Wildlife Management 18(2): 170-178, graphs. April 1954.
Summary: "Charts...are presented which help the planning of experiments by indicating the approximate number of animals required in each sample to establish a difference in percentages as significant at the 5 percent (probability of a Type I error) level. The charts are constructed for two levels of Type II error (failure to ascribe significance to a real difference). Discussion of the two types of error, applicability of the respective charts, and several examples are also given."

Dewey, Edward R. (680 West End Ave., N. Y. 25.) DR. WING'S LATEST CYCLE DISCOVERIES. Cycles--A Monthly Report 5(5): 163-175, illus. May 1954.
From author's summary: "This article is a pre-publication account of some important observations recently made by Dr. Leonard W. Wing. In brief, Dr. Wing has observed that the times of the peaks of a certain 4 1/4-year temperature cycle come later (in a regular sequence) as you find these peaks in various latitudes from pole to equator. The pattern found by this behavior is similar to the butterfly pattern characteristic of sunspots. The same 4 1/4-year cycle in other phenomena seems to behave the same way, too."

WILDLIFE--BIOMETRICS--Continued

Overton, W. Scott, Jr. (Fla. Game Comm.) POST SEASON MAIL SURVEY TECHNIQUES AND PROCEDURES. Presented at 7th An. Conf., SE Assn. of Game and Fish Commissioners, Chattanooga, Tenn., Oct. 11-14, 1953. 1-18 p.
Discussion of methods and problems involved in use of Florida's statistically controlled game-harvest survey. Certain of the problems and approaches are described in detail and a number of formulas are presented. The paper should be of interest to those planning or operating such surveys.

Slobodkin, L. Basil. (U. Mich.) POPULATION DYNAMICS IN DAPHNIA OBTUSA KURZ. Ecological Monographs 24(1): 69-88, graphs. Jan. 1954.
Experiments with carefully controlled laboratory populations led to a conclusion of some general interest: "These experiments seem to cast doubt on the general applicability of logistic population growth curves... It is possible that the apparent agreement between sigmoid population curves and existing data is due to premature termination of experiments, averaging of supposedly random populations, and arbitrary fitting of curves to data."

Stearman, R. L., T. G. Ward, and R. Ann Webster. (Johns Hopkins School Public Health.) USE OF A "COMPONENTS OF VARIANCE" TECHNIQUE IN BIOLOGICAL EXPERIMENTATION. American Journal of Hygiene 58(3): 340-351. Nov. 1953.
"...variations in results [of experiments] may arise from each of...the different steps in the procedure. The...technique provides a potent statistical tool for estimating the amount of variation arising from each of these sources."

Widrig, T. M. (US F&WS, 450-B Jordan Hall, Stanford, Calif.) DEFINITIONS AND DERIVATIONS OF VARIOUS COMMON MEASURES OF MORTALITY RATES RELEVANT TO POPULATION DYNAMICS OF FISHES. Copeia 1954(1): 29-32. Feb. 1954.

Williams, C. B. (Rothamsted Exp. Sta., Harpenden, Herts., Eng.) THE STATISTICAL OUTLOOK IN RELATION TO ECOLOGY. The Journal of Ecology 42(1): 1-13, illus. Jan. 1954.
Numerous and diversified examples of application of statistical methods to problems of animal ecology. Includes 8 graphs but no formulas or sample calculations.

Worrell, Albert C., and A. S. Todd, Jr. (U. Ga.) MAIL SURVEYS IN FORESTRY RESEARCH. Journal of Forestry 52(3): 205-206. March 1954.
Follow-up letters to increase returns were found economical and important. Second and third letters increased replies from 16% to 49% in one test, from 21% to 55% in another. Replies are far from random; the individuals with the largest quantities to report are usually the first to do so. Correction for bias should be made unless 90% response is obtained. Correction can be made by interviews with nonrepliers, or by statistical method (reference to which is cited) if data from 3 or more successive mailings are available.

WILDLIFE--ECONOMIC AND OTHER VALUES

Sumner, Lowell. (Nat. Park Service, San Francisco 5, Calif.) ALASKA'S BIOLOGICAL WEALTH; WHY LET HISTORY REPEAT ITSELF? In Science in Alaska 1951, Proceedings 2nd Alaskan Science Conference, Alaska Div. AAAS. 337-339 p. [1953.]
Points out that Alaska's natural resources are being depleted or destroyed at increasing speed. Alaskans should be brought to realize that biological resources are the region's greatest strength and that it is essential that they be put on a sustained yield basis. Furthermore, these resources are indispensable for what may become the region's greatest industry: outdoor recreation by both residents and tourists.

WILDLIFE--NATURAL AREAS AND REFUGES

Audubon Society of D. C. (Box 202, Benj. Franklin Sta., Wash. 4, D. C.) WASHINGTON--CITY IN THE WOODS. Atlantic Naturalist 9(1): 3-29, illus. Sept.-Oct. 1953. 9(2): 60-87, illus. Nov.-Dec. 1953.

Washington was once famous for the wild and scenic areas in and near the city. Now these areas are being destroyed, invaded, or threatened for any number of reasons. Public agencies that might fight to keep them natural are speeding their change and are doing little to set up new wild areas. This series of articles takes up the major areas (Rock Creek Park, Anacostia Marshes, C. & O. Canal, etc.) one by one, and explains their histories, natural values, and the fates that have or are likely to befall them. [It may be said that these areas are in a special category because they are near a large city. But it is becoming apparent that public ownership makes all tracts choice targets for every developer (see Gabrielson, p. 8, this issue of WR). Is a natural area safer in the hands of a strong, dedicated private group than in public ownership?]

Darling, Jay N. THE STORY OF THE WILDLIFE REFUGE PROGRAM. PART 1. National Parks Magazine 28(116): 6-10, 43-46, illus. with author's cartoons. Jan.-Mar. 1954.

In his usual pungent style, and with respect for few, the famous cartoonist and former Chief of the Biological Survey tells how the refuge program got its start during the drought and depression of the thirties. The waterfowl situation was going from bad to worse while would-be conservationists fought amongst themselves as to what should be done. Congress was willing to pass the Duck Stamp Act but would not appropriate special funds. Then the late Senator Norbeck of S. D. arose and proposed a rider to the act. Speaking with his usual heavy accent, but without his dentures, no one realized he was proposing to take $6 million from unexpended relief funds of the past year to set up the refuge program. Passed and hurriedly signed, the act was in effect before Congress or the President knew what was going on. Howls of rage came too late--the program was on its way and rapidly picking up support and cooperation.

Gabrielson, Ira N. (Wildl. Mgt. Inst., Wire Bldg., Wash. D. C.) THREATS TO THE FEDERAL WILDLIFE REFUGES. Audubon Magazine 56(1): 8-12, illus. Jan.-Feb. 1954.

Discusses many recent moves that could lead to injury or destruction of refuges from Georgia to Alaska. Military agencies are the worst offenders. Some plans of the Reclamation Service would destroy whole refuges. Private groups frequently plan injurious exploitation of refuges. States are not free from the urge to grab federal land for nonwildlife projects. Threats of this sort are bound to continue and intensify. "...the only safeguard, despite laws, is a strong, informed, and militant public that will fight to maintain the integrity of the refuge system..."

Greene, H. C., and J. T. Curtis. (U. Wis. Botany Dept.) THE RE-ESTABLISHMENT OF PRAIRIE IN THE UNIVERSITY OF WISCONSIN ARBORETUM. Wild Flower 29: 77-88, illus. Oct. 1953.

Prairie is now so scarce that it is being re-established artificially for study and museum purposes. This paper discusses techniques that have been used successfully. It includes a table of common plants of Wis. prairie, showing whether commonest in wet, mesic or dry sites, and number of plants needed per acre. Another table lists species successfully re-established. Among techniques used to aid establishment are burning, scarification of soil, broadcasting seed in disked areas, spot planting, etc.

Schull, Herman W., Jr. (Army Engineers, Jacksonville, Fla.) WILDLIFE AND TAME WATER CAN SPLIT A FLORIDA MELON. Florida Wildlife 7(12): 12-14, 41, illus. May 1954.

Engineer's view of the huge Florida water control project, part of which is resulting in the great Loxahatchee wildlife areas. See also van Dresser and Smith, WR 75:10.

WILDLIFE--NATURAL AREAS AND REFUGES--Continued

Spurr, Stephen H. (U. Mich.) THE FORESTS OF ITASCA IN THE NINETEENTH CENTURY AS RELATED TO FIRE. Ecology 35(1): 21-25, illus. Jan. 1954.
Of particular importance to those managing parks and other natural areas. Problems of the same type are widespread. "From the records of early visitors to the region and from examination of tree sections for fire scars, the status of the forests of Itasca State Park in Minnesota during the nineteenth century is described. The present pine stands in the park are due to periodic fires during that and preceding centuries. If these pine stands are to be perpetuated rather than replaced by boreal or hardwood forests, it is recommended that prescribed burning or some chemical or mechanical substitute be used to prevent this replacement."

Sumner, Lowell, and George L. Collins. (Nat. Park Service.) ARCTIC WILDERNESS. Living Wilderness 18(47): 4-15, illus. Winter 1953-54.
Story of recent exploration of the area in northeastern Alaska that is being recommended for designation as a wilderness area. The article contains considerable information on the country and notes on its wildlife, especially caribou herds and their travels. The authors believe the area should be a wilderness preserve, but they do not feel that military activities or mining in it need be prohibited.

Tilden, Freeman. THE NATIONAL PARKS / WHAT THEY MEAN TO YOU AND ME. Alfred A. Knopf, N. Y. x + 324 p. First published in 1951 at $5.00. Reset and printed in thick pocket-book format in 1954. $1.00, paper.
This is a good letterpress publication from new plates, not an offset job. "An inspiring, informative discussion of the significance of the system and of many individual parks and monuments. The parks and monuments are grouped to show their predominant character: forest, volcanic, uplift and erosion, caves, deserts, the work of glaciers, the Tropics."--Neil Hotchkiss, in WR 65:3.

Various authors. OREGON'S NATIONAL FOREST WILDERNESS. Living Wilderness 18(47): 16-23, illus. Winter 1953-54.
Description and sketch map of each area, with notes on hunting and fishing values.

WILDLIFE--MORPHOLOGY, PHYSIOLOGY, BEHAVIOR, MIGRATION

Davies, A. W., and Alastair N. Worden. (Univ. Coll. of Wales, Aberystwyth.) THE LIVER VITAMIN A RESERVES OF SOME BRITISH WILD ANIMALS. Proceedings of the Zoological Society of London 123(4): 739-746. Feb. 1954.
Records for 71 specimens representing 10 species of mammals, 8 of birds, and 2 of fish. In general, results were within expected ranges.

Ford, Clellan S., and Frank A. Beach. PATTERNS OF SEXUAL BEHAVIOR. Harper and Bros. and Paul B. Hoeber (N. Y.); Eyre and Spottiswoode (London). x + 307 p., illus. 1951. $4.50. [From review by R. G. Grenell, Quarterly Review of Biology 27(2).]
"Clearly and interestingly written...presents the results of a comprehensive study of the sexual behavior of the Eutheria." The authors "have amassed and studied an enormous mass of data: material relative to...the sexual behavior of 190 human societies as well as various groups of animals. Their analysis is threefold: Cross-cultural, evolutionary, and physiological."

Milne, Lorus J. and Margery J. (U. of N. H.) THE MATING INSTINCT. Little, Brown & Co., Boston. 1-243 p., illus. 1954. $4.50.
One fascinating fact follows another in quick succession in this popular book. It is a rare zoologist who will be familiar with half of the information so interestingly presented. Indeed, the more familiar material is played down. Examples are drawn from the whole animal kingdom and intermingled according to topic. These topics, around which the book is organized are:

WILDLIFE--MORPHOLOGY, PHYSIOLOGY, BEHAVIOR, MIGRATION--Continued

sexual differences; recognition of sex and selection of mates; finding and pursuit of mates; combat, display, and hierarchies; courtship; mating methods; hatching or birth; parental care; sex determination; parthenogenesis and the value of sexuality in promoting variation. A bald list of this sort gives no conception of the wealth of strange and marvelous facts upon which the book is built, and to which the organization is secondary. A useful appendix lists the old and obscure names for males, females, and young of many species. Errors must be inevitable in a book treating so many subjects and drawn from so many sources, but the reviewer was able to spot very few of them. The lack of documentation is annoying--there is but 1 reference--but such, right or wrong, is the way of publishers with popular books.

Miner, Roy Waldo, editor. PARENTAL AGE AND CHARACTERISTICS OF THE OFFSPRING. Annals of the New York Academy of Sciences 57(5): 451-614, illus. Jan. 1954.
Twenty-one contributions by specialists. Organisms considered range from Lemna minor and rotifers to mice and human beings.

Selye, Hans. THE PHYSIOLOGY AND PATHOLOGY OF EXPOSURE TO STRESS. A TREATISE BASED ON THE CONCEPTS OF THE GENERAL-ADAPTATION-SYNDROME AND THE DISEASES OF ADAPTATION. Acta, Montreal, Canada. xx + 822 + 203 p., illus. 1950. [From review by Eliot Stellar, Quarterly Review of Biology 26(4).]
This huge scholarly work presents in full detail ideas that Christian and others have applied to interpretation of population dynamics in wild animals.

WILDLIFE--BIOTAS, COMMUNITIES, GENERAL ECOLOGY

Black, John D. (Mo. Teachers Coll., Kirksville.) BIOLOGICAL CONSERVATION / WITH SPECIAL EMPHASIS ON WILDLIFE. Blakiston Co., N. Y. & Toronto. xiv + 328 p., illus. 1954. $5.00.
"This book is not written as a guide for the expert or the professional wildlife man, but for the beginner. It does not profess to be complete or perfect. It does attempt to place the big, major problems and their solutions before the college student..." The "big major problems" are handled clearly and forcefully, and with full awareness of sociological implications. The author does not flinch from stepping on toes. Importance and ecological relationships of soil, water, vegetation, and wildlife are explained with an abundance of examples and good illustrations. Aquatic animals and situations are given much attention, as are birds and mammals. Grasslands, forests, fishes, reptiles and amphibians, and invertebrates have their chapters. Good management and preservation practices are stressed. The whole book is easy reading. Perhaps dramatic examples are given too much play, and perhaps too much space is devoted to nonessential discussions of individual species. Certainly minor errors of fact or interpretation are too common. Most could have been avoided by submitting portions of MS to specialists--a practice that is essential in preparing a diversified book. Selected references are cited, but critical readers will wish for documentation of some of the more striking statements, despite the author's contention that this would make for a dull book. A fine feature of the volume is an annotated list of free films that the author has found useful in teaching.--Fred H. Dale.

Cross, R. H., Jr. (Va. Comm. Game.) THE EFFECTS OF LAND USE TRENDS ON STATEWIDE GAME MANAGEMENT PLANNING. Presented at 7th An. Conf., SE Assn. of Game and Fish Commissioners, Chattanooga, Tenn., Oct. 11-14, 1953. 1-13 p. + map.
Gives brief description of each of the 12 resource areas into which Va. is divided. One of these areas, Southwest Va., is described in detail and each form of game in the area is discussed as to status, habitat conditions, and management. A few points of interest may be singled out for mention. Preservation of 2 small elk herds is considered of doubtful value because more deer could be produced in their place, thus spreading hunting. Stock losses attributed to bears are often questionable. Trapping is the control measure recommended for bears that cause damage. In most sections of the area, foxes

WILDLIFE--BIOTAS, COMMUNITIES, GENERAL ECOLOGY--Continued

have passed their peak and begun to decline, with numerous dead ones found in at least 2 counties. Cause is unknown. Beaver is considered a nuisance species that perhaps should be eliminated from the area.

Guiguet, C. J. AN ECOLOGICAL STUDY OF GOOSE ISLAND, BRITISH COLUMBIA, WITH SPECIAL REFERENCE TO MAMMALS AND BIRDS. Occasional Papers of the British Columbia Provincial Museum no. 10. iii + 78 p., illus. March 1953.

These islands lie off the coast of B. C. Their habitats are described. Ecology of each mammalian species is discussed. Efforts are made to transform snap-trapping data for small mammals into population data for habitats. An annotated list of birds is given and bar graphs show number of each species seen. The paper is based on 4 months of field work in the summer of 1948.

Jenkins, J. H. (U. Ga.) THE GAME RESOURCES OF GEORGIA. Georgia Game and Fish Commission. ix + 114 p., illus. 1953.

Report of state-wide survey. Contains information on status, distribution, and management of all groups of game and fur animals. Ranges of several species are mapped. In addition to chapters on species and groups of animals, there are sections on survey methods used (chiefly interviews), wildlife regions of Ga., brief history of settlement and land use in Ga., fate of introduced species, and future outlook for wildlife. The author's views on such topics as restocking, predation, and effect of hunting are modern and balanced. His recommendations for management take account of regional variations in the state and often are detailed. Fallacious measures are explained. In general, land use trends favor most game and fur species. Some game species, including deer and turkey, are spotty in distribution and require much more education and enforcement for protection from illegal slaughter. Bears are hated and feared although they do little real damage; their future in the state is dim. Most furbearers are thriving, partly because of low pelt prices and decline of interest in trapping. Beaver and otter are more than holding their own. No species is recommended for introduction.

Langlois, Thomas H. (Ohio St. U.) THE WESTERN END OF LAKE ERIE AND ITS ECOLOGY. J. W. Edwards Inc., Ann Arbor, Mich. xx + 479 p., illus. 1954. $10.00.

"This report, summarizing a series of studies which have been made during a span of sixty years, aims to supply the basis for a fish management program for Ohio's part of Lake Erie." Fish management certainly is discussed, from details of commercial fishing methods to details of agricultural practices on the drainage area, but in essence this volume is a source book of data on Lake Erie and its fauna and flora. The presentation is mainly narative rather than tabular. Physical factors such as wind and waves, pollution, shoreline problems, and ice are discussed. Each group of plants and animals receives attention that varies from listing to long discussions of ecology and life history. Biology of fish species is, of course, treated at length, the treatment ranging from senses to food habits. A limited discussion of fish populations is devoted largely to refuting certain findings of Van Oosten. Limnology, in the usual sense of the word, is discussed only incidentally, but much space is given to natural history notes, including descriptions of mating behavior. As a collection of both trivial and important data on the area, the book will be useful, but it cannot be considered an integrated treatise. It has 26 tables and 72 illustrations. Reproduction of photographs sets a new low.--John T. Linehan.

Ruttner, Franz. (Lunz Biol. Sta., Austria.) Translated by D. G. Frey and F. E. J. Fry. FUNDAMENTALS OF LIMNOLOGY. University of Toronto Press. xi + 242 p., illus. 1953. $6.50.

Regarded by its translators as "perhaps the best book available in any language on the principles of limnology." Chemical and physical aspects are emphasized so that the volume in large part complements rather than replaces other texts. The principles of limnology are presented in a smooth flowing manner that leads the reader from one subject to the next without effort.

WILDLIFE--BIOTAS, COMMUNITIES, GENERAL ECOLOGY--Continued

References to latest methods and concepts fall naturally into the discussions, and the text is enlivened by numerous descriptions of actual studies being conducted at various limnological stations. Relationships between organisms and the properties and components of environment are skillfully drawn in a style that will enthuse both casual reader and scientist. Half of the book deals with the effect of physical properties and dissolved substances on water environment, and half treats of biotic communities. Seven pages of glossary and 9 of bibliography. Most references cited are in German.--John T. Linehan.

Stephenson, T. A. and Anne. (Univ. College, Aberystwyth, Wales.) LIFE BETWEEN TIDE-MARKS IN NORTH AMERICA. IIIA. NOVA SCOTIA AND PRINCE EDWARD ISLAND: DESCRIPTION OF THE REGION. Journal of Ecology 42(1): 14-45, illus. Jan. 1954.

Describes the distribution of algae and animals on rocky substrata at a number of localities on the coasts of Nova Scotia and Prince Edward Island.--Neil Hotchkiss.

Stephenson, T. A. and Anne. LIFE BETWEEN TIDE-MARKS IN NORTH AMERICA. IIIB. NOVA SCOTIA AND PRINCE EDWARD ISLAND: THE GEOGRAPHICAL FEATURES OF THE REGION. Journal of Ecology 42(1): 46-70, illus. Jan. 1954.

Discusses variations in zonation, distribution of Fucaceae (brown algae) and Littorina (snails), similarities and differences in the littoral faunas and floras of Britain and Nova Scotia, the effects of cold and ice on shore populations, etc.--Neil Hotchkiss.

Westermann, J. H. (Zool. Lab., 3, Janskerkhof, Utrecht, Holland.) NATURE PRESERVATION IN THE CARIBBEAN. A REVIEW OF LITERATURE ON THE DESTRUCTION AND PRESERVATION OF FLORA AND FAUNA IN THE CARIBBEAN AREA. Publications of the Foundation for Scientific Research in Surinam and the Netherlands Antilles, Utrecht, no. 9. 1-107 p., illus. Dec. 1953.

A valuable review that deserves wide distribution. Lands considered are the Caribbean islands, the Guianas, and British Honduras. The author fully realizes the difficulties of gaining protection for endangered species, enforcing game laws, and establishing nature reserves in countries where poverty and ignorance are major problems and there is little interest in nature. But conservation needs are acute in these lands: extinction has been common, destruction is proceeding rapidly, and reserves are few and ill protected. Sections of this paper are: Human populations and land and forest areas in the Caribbean. General conditions of the flora and fauna. Effects of faunal introductions (includes good compilation on mongoose and others). Extinct and endangered mammals. Extinct and endangered birds. Extinct and endangered land reptiles and amphibians. Conservation of sea turtles, whales, and spiny lobsters. Legislation, nature reserves, and other data on nature protection in the various territories (area by area analysis). Inter-Caribbean, inter-American and international activity. General recommendations. Selected bibliography. This paper no doubt will remain the standard reference on its subject for some time. For similar review of economic conservation problems, see Westermann, WR 73:86.

Weyer, Edward M., Jr., editor. STRANGEST CREATURES ON EARTH. Sheridan House, N. Y. 255 p., illus. 1953.

Thirty-seven fascinating articles selected from Natural History Magazine. Among the animals discussed are giraffe, sloth, diving spider, gliding opossum, sea otter, sting ray, jacksnipe, archer fish, and kiwi. Enjoyable reading for all actual or potential naturalists.

Wynne-Edwards, V. C. (Aberdeen U., Scotland.) FRESHWATER VERTEBRATES OF THE ARCTIC AND SUBARCTIC. Fisheries Research Board of Canada (Ottawa), Bulletin no. 94. 1-28 p., illus. 1952. 30¢.

Chiefly on fishes but gives data on most northern localities in North America for Rana and Pseudacris, and on distribution in freshwater of white whale and ringed and harbour seals. Also notes on same or similar species in Old World.

WILDLIFE--NUMBERS AND NUMBER FLUCTUATIONS

A SYMPOSIUM ON CYCLES IN ANIMAL POPULATIONS. Journal of Wildlife Management 18(1): 1-112, graphs. Jan. 1954. [Reprints of symposium available from D. L. Leedy, U. S. Fish & Wildlife Service, Washington 25, D. C., for $1.00.]

An important set of technical articles. Some of the leading experts in biological and mathematical study of cycles present and compare their latest findings and opinions. To a considerable extent their papers center around the question of the acceptability of the view of Palmgren and Cole. This view is, in Cole's words, that "the preferred interpretation of population cycles should be that they are essentially random fluctuations with serial correlation between the populations of successive years." Some of the authors take at least partial issue with Cole on biological grounds, others approach the problem mathematically. Many points of view are represented, but little if any area of agreement is apparent. As a group the papers defy appraisal by anyone except a mathematical specialist. The individual papers are listed below without comment, for most of them cannot be characterized without much study. Dr. J. J. Hickey has presented abstracts of several of the articles in The Auk 71(2), April 1954.

Cole, LaMont C. (Cornell U.) SOME FEATURES OF RANDOM POPULATION CYCLES. Journal of Wildlife Management 18(1): 2-24, graphs. Jan. 1954.

Errington, Paul L. (Iowa St. Coll.) ON THE HAZARDS OF OVEREMPHASIZING NUMERICAL FLUCTUATIONS IN STUDIES OF "CYCLIC" PHENOMENA IN MUSKRAT POPULATIONS. Journal of Wildlife Management 18(1): 66-90, graphs. Jan. 1954.

Hickey, Joseph J. (U. Wis.) MEAN INTERVALS IN INDICES OF WILDLIFE POPULATIONS. Journal of Wildlife Management 18(1): 90-106, graphs. Jan. 1954.

Hutchinson, G. E. (Yale U.) THEORETICAL NOTES ON OSCILLATORY POPULATIONS. Journal of Wildlife Management 18(1): 107-109. Jan. 1954.

Lack, David. (Ed. Gray Inst. Field Ornith., Oxford, Eng.) CYCLIC MORTALITY. Journal of Wildlife Management 18(1): 25-37. Jan. 1954.

Marshall, William H. (U. Minn.) RUFFED GROUSE AND SNOWSHOE HARE POPULATIONS ON THE CLOQUET EXPERIMENTAL FOREST, MINNESOTA. Journal of Wildlife Management 18(1): 109-112. Jan. 1954.

Moran, P. A. P. (Australian Nat. U., Canberra.) THE LOGIC OF THE MATHEMATICAL THEORY OF ANIMAL POPULATIONS. Journal of Wildlife Management 18(1): 60-66. Jan. 1954.

Ricker, W. E. (Pacific Biol. Sta., Nanaimo, B. C.) EFFECTS OF COMPENSATORY MORTALITY UPON POPULATION ABUNDANCE. Journal of Wildlife Management 18(1): 45-51, graphs. Jan. 1954.

Rowan, Wm. (U. Alberta.) REFLECTIONS ON THE BIOLOGY OF ANIMAL CYCLES. Journal of Wildlife Management 18(1): 52-60, graph. Jan. 1954.

Siivonen, Lauri. (Game Research Inst., Helsinki, Finland.) SOME ESSENTIAL FEATURES OF SHORT-TERM POPULATION FLUCTUATION. Journal of Wildlife Management 18(1): 38-45, graph. Jan. 1954.

WILDLIFE--PARASITES AND DISEASES

Babero, Bert B. DIPHYLLOBOTHRIASIS IN ALASKA. In Science in Alaska 1951, Proceedings 2nd Alaskan Science Conference, Alaska Div. AAAS. 312-314 p. [1953.]

Experiments in infecting various birds and mammals, including man.

Dolman, C. E. (U. Brit. Col.) SOME WAYS IN WHICH ANIMAL HEALTH AFFECTS HUMAN HEALTH. Canadian Journal of Comparative Medicine and Veterinary Science 18(2): 35-50. Feb. 1954.

Good, brief review of diseases transmissable from animals to man, with discussions of their biology.

WILDLIFE--PARASITES AND DISEASES--Continued

Jones, John C. RABIES IN VIRGINIA AND ITS RELATION TO WILDLIFE. Virginia Wildlife 15(4): 8-10, 12. April 1954.
Known incidence, by species and county, 1951-53; control activities; recommendations for integrated, state-wide program.

WILDLIFE--MORTALITY FROM INSECTICIDES, WEATHER, CARS, ETC.

Anonymous. DUST AND DUCKS. Colorado Conservation 3(3): 26-27, illus. May-June 1954.
Photo-story, complete legend for which follows: "A few short weeks ago, a flight of ducks and geese landed on a shallow pond a few miles east of Lamar in the southeastern Colorado dust bowl. The waterfowl stuck to the pond as the wind tore the land into swirling clouds, piling it deep along the fence rows, sifting through the boards of dwellings and barns. Dust settled on the pond, too, until only a cracked mud flat remained. And by that time, the nostrils and windpipes of the honkers and mallards were choked with dust-turned-mud, and over 300 were counted dead when the wind finally ebbed. Elsewhere in the eastern plains, hundreds of small birds, some rabbits, at least four antelope and one deer, as well as more waterfowl, were tallied victims of the storm. What the toll was, no one knows. But the worst is yet to come. The [dust] covered fence rows mean the loss of the only habitat in the stricken area, and many animals and birds will succumb gradually to the effects of dust pneumonia. You have read before that uses of the land affect wildlife. Are there any skeptics now?"

Rudd, Robert L. (U. Calif. at Davis.) FIELD REPORTING OF SUSPECTED WILDLIFE POISONING BY AGRICULTURAL CHEMICALS. California Fish and Game 40(2): 167-173. April 1954.
"This paper presents a method [steps to be followed] for reporting observed field effects of these agents on wildlife. Also, some 21 insecticides and herbicides now commonly in use are described as to their use and possible effects on wildlife."

Schultz, Vincent. (Va. Polytechnic Inst.) THE EFFECTS OF A SEVERE SNOW AND ICE STORM ON GAME POPULATIONS IN TENNESSEE. Report of the Reelfoot Lake Biological Station 18: 24-35, maps. Jan. 1954. [Same as J. Tenn. Acad. Sci. 29(1).]
Author's summary: "A study of the effects of the January-February, 1951, ice storm on populations of rabbits, quail, doves, and songbirds is presented. Information was obtained primarily by interview of heads of farm households in regard to observations of game mortality during and immediately following the ice storm period. This storm, the severest on record for Tennessee, resulted in the death of thousands of rabbits, quail, doves, and songbirds. Its effects were apparently severe enough to cause a reduction in the subsequent fall population of squirrels and doves." See also WR 67:7.

Young, Howard, Andrew Hulsey, and Robert Moe. (Western Ill. St. Coll.) EFFECTS OF CERTAIN COTTON INSECTICIDES ON THE MOURNING DOVE. Proceedings of the Arkansas Academy of Science [for 1952]. 43-45 p. [+ 5 p. of tables in reprints, not in journal.] [1953.]
Authors' summary: "Mourning doves were exposed in separate tests to varying dosages of calcium arsenate, benzene hexachloride, toxaphene, dieldrin, and aldrin, under simulated field conditions. Results indicate that routine field applications of calcium arsenate, toxaphene and benzene hexachloride do not constitute a serious danger to wild mourning dove populations. Aldrin and dieldrin proved to be extremely toxic, and apparently could not be detected by the birds. As they are not heavily employed in Arkansas, they probably do not have a significant effect on wild dove populations."

WILDLIFE--MANAGEMENT--GENERAL

Allen, Durward L. (US F&WS.) DIVIDENDS FROM WILDLIFE RESEARCH. Presented at 15th Midwest Wildlife Conference. Chicago, Ill., Dec. 9-11, 1953. 1-7 p.

We forgive our wildlife blunders because the science is young. But human populations are irrupting, land-use stresses are growing, and wildlife habitat is vanishing so rapidly that we are just about in a now-or-never period. Present research cannot meet the needs. Too many workers are inexperienced and turnover is too rapid. Suitable pay is the only solution. Good direction may be lacking, although it is our best investment. Some projects have such slim financing that what money is spent is wasted. Difficult programs may require teams of specialists. Fact-finding should precede the need for it, but research often is begun too late, when operations are under way. Lack of research may have spectacular results. Responsibility for putting research results into practice is on top administrators and their skilled information specialists. It cannot be left up to biologists. Difficulty of getting support for research stems from failure of many to see its importance. We pride ourselves on "practicality," which may mean merely perpetuation of errors and ignorance. We cannot expect grass-roots demand for research; desire for it must come from the top. Today research is essential in all lines of work, wildlife as well as well as industrial and military. The front offices must face this need.

Anonymous. COST OF PUBLIC HUNTING TOO HIGH. South Carolina Wildlife 1(2): 24. Spring 1954.

Why doesn't the Wildlife Resources Department buy some upland and develop it for quail hunting? Well, you'd want about 10,000 acres in pretty much of a solid block. This would cost around $500,000. "To develop the land for maximum quail production might cost $50,000, and maintenance and management would run between $10,000 and $15,000 annually. With the planting of food and cover, protection, and possibly predator control, you might figure on 3,000 birds, with half of them being bagged each year. Five per cent interest on $500,000, the land purchase price, is $25,000 which might be used for other game management purposes. Add to that a minimum of $10,000 for maintenance and management and you have $35,000--meaning that every quail killed is costing the Department a little over $23.00 annually. And remember that every one of the 50,000-odd hunters who bought a $3.10 license would think he should be allowed to hunt on the 10,000 acres if he wished."

Bridges, Henry P. THE WOODMONT STORY. A. S. Barnes & Co., 232 Madison Ave., N. Y. 16. 209 p., illus. 1953. $10.00. [From Outdoor News Bulletin 8(10).]

"...the life history of the famous Woodmont Rod and Gun Club of Hancock, Maryland. In a readable and interesting manner are presented the story of its origin, development, behind the scenes operations... When the area was to be sold to a lumber concern in 1908, it was Bridges who organized a group to purchase the property. Breeding wild turkeys is a Woodmont specialty, and the author tells much about how turkeys are raised and hunted. Within the confines of the 8,000-acre tract are found deer, turkeys, ducks, pheasants, quail, doves, squirrels, and rabbits. Trout and bass abound in two specially constructed lakes...Handsomely bound and well illustrated, THE WOODMONT STORY, in addition to being an informative and interesting history, shows what can be done in providing outstanding hunting and fishing on an area of this kind."

Cowan, Ian McTaggart. (U. of B. C., Vancouver.) PLANT SUCCESSION AND WILDLIFE MANAGEMENT. In Science in Alaska 1951, Proceedings 2nd Alaskan Science Conference, Alaska Div. AAAS. 322-327 p. [1953.]

General review of the subject as it applies in the North. One point made is that while most big game thrives in early successional stages, the value of certain furbearers, particularly marten, is so great that it is economically advisable to leave some large areas in climax vegetation. Mountain sheep are primarily grazers. Their range in parts of the Canadian Rockies

WILDLIFE--MANAGEMENT--GENERAL--Continued

was of a fire type, and as it naturally reforests, the sheep are being increasingly limited in range and numbers. The concept of climatically limited carrying capacity is considered, with the conclusion "that we must strive to maintain a population level that is somewhere between the carrying capacity of the greatest range area available on mild winters and the smallest available on severe winters. The determination of this level for different circumstances will require experiment over many years." Stable big game populations cannot be expected in the North. Our management should be based on expectation of fluctuations, and therefore needs great flexibility.

Egler, Frank E. (Amer. Mus. Nat. Hist., N. Y.) OUR DISREGARDED RIGHTS-OF-WAY--TEN MILLION UNUSED WILDLIFE ACRES. Trans. 18th N. Amer. Wildl. Conf. 147-156 p. 1953.

Clearing rights-of-way by selective basal spraying is just as cheap initially and cheaper to maintain than blanket spraying. Selective spraying provides edge effects and encourages plant growth favorable to wildlife.--L. F. Stickel.

Elkins, W. A. (US F&WS, Juneau, Alaska.) PRESSING PROBLEMS IN ADMINISTRATION OF WILDLIFE RESOURCES IN ALASKA. In Science in Alaska, Selected Papers of the Alaskan Science Conference, Nov. 1950. Arctic Institute of North America, Special Publication no. 1. 268-281 p. June 1952.

Discussions of several questions or difficulties. Moose overbrowsing is hurting certain ranges, but problems of accessibility complicate properly distributed harvest. Some caribou are resident, others migrate hundreds of miles. What determines time and route of migration, and how can migratory herds be managed best? Sea otters occur at well separated sites, with good habitat between. Is this the result of dispersal, or is transplanting necessary? Management of waterfowl depends in part on better knowledge of migration routes. It now appears that different species follow quite different routes. Human population has doubled since 1940, creating many new problems. Many temporary residents are far from being conservationists. Natives are a special problem. They have real need of meat and fur to survive. Should they be bound by the same regulations as whites? Should they be allowed to kill waterfowl in spring when food is scarce? Should the registered trap-line and communal trapping area systems be expanded to stop fur-animal depletion? These systems have worked well in some parts of Alaska. As background for all such problems it must be recognized that (1) Alaska has low productivity of fish and game per unit area, and (2) most of Alaska is better suited to production of game and fur than to any other purpose.

Fisher, Ralph A., Sr. DISPLACED WILDLIFE. New Jersey Outdoors 4(10): 20-23, 26, illus. April 1954.

Several tragic examples of what happens when tamed wildlife is released in the wild. The examples are excellent for citing in this connection.

Fowle, C. D., and J. F. S. Bendell. (R. R. 2, Maple, Ont.) [REPORT OF THE WILDLIFE COMMITTEE OF THE CANADIAN INSTITUTE OF FORESTRY.] Forestry Chronicle (Spec. Suppl.), Serial no. 118. p. 40-45. March 1954.

A review of significant developments in wildlife research and management across Canada during 1953.--C. D. Fowle.

Marshall, Hubert, and Robert J. Young. (U. Fla.) PUBLIC ADMINISTRATION OF FLORIDA'S NATURAL RESOURCES. University of Florida, Public Administration Clearing Service, Studies in Public Administration no. 9. ix + 257 p., maps. 1953.

Readable and well considered account of history and present organization of Florida's resource agencies. Functions, trends, and problems are discussed and recommendations are made. Important progress has been achieved in recent years, partly with aid of federal government. The authors believe several agencies should be combined into a department of natural resources, lines of authority should be definite, merit system for personnel should be much

WILDLIFE--MANAGEMENT--GENERAL--Continued

extended, more reliance should be placed on professional advice, confusing and overlapping laws should be simplified, salary scale should be adequate to keep good men, and more support should be given certain functions such as park development. The book brings together many useful data and viewpoints. The picture it presents is, on the whole, encouraging.

Schulz, William F., Jr. CONSERVATION LAW AND ADMINISTRATION; A CASE STUDY OF LAW AND RESOURCE USE IN PENNSYLVANIA. Ronald Press, N. Y. 607 p. 1953. $10.00.
Technical analysis of Pa. conservation system, and proposal of what the author concludes would be a model state conservation set-up.

Wagar, J. V. K. (Colo. A & M Coll.) RECREATION AND WILDLIFE PROBLEMS OF THE CENTRAL ROCKY MOUNTAINS. Journal of Forestry 52(3): 186-190. March 1954.
Eloquent essay on a number of problems in fields named. Author's conclusions: "These sample problems indicate general failure to manage interrelated recreation and wildlife resources with gratifying skill. And I doubt that we shall achieve effective management until three measures are instituted: 1. Establish qualitative and quantitative objectives of management. Simple, understandable, acceptable quality standards for recreation and wildlife production and harvest are the first need. Then standards of quantity can be fixed. 2. End habits of speech and thinking which imply that management is not needed. We must no longer use the words 'unlimited' or 'unspoiled' to describe wildlife recreation; just as we abandoned these words when timber resources were placed under management. 3. Fit consumption to productivity. Limit recreational use to what land productivity and quality of recreation desired can withstand."

WILDLIFE--MANAGEMENT--HARVESTS AND HUNTING

Allen, Ralph H., Jr. (Ala. Dept. Cons.) HUNTING SUCCESS FOR 1952-53 SEASON. Alabama Department of Conservation. 26 unnumbered p., maps. 1953.
Based on reports of wardens in each county. Each species or group of game is rated for each county as increased, decreased, or unchanged. Primary criterion was size of bags. Results are shown on colored maps for each type of game. For deer and turkey, estimated numbers of legal and illegal kills are reported for each county. A brief discussion is given for each species or group, summarizing results and listing probable and suggested causes for population changes. Quail hunting success was at all-time low, probably because of dry weather and less habitat. Rabbits remained near peak; they are considered cyclic in Ala. Squirrels increased or decreased regionally, depending on previous year's mast crop. Dove hunting was generally better. Duck hunting was much improved. Raccoons are thought to have reached saturation point of habitat, but, like opossum, are getting less attention from hunters.

Anonymous. THE 1953 HUNTER HARVEST. Wyoming Wild Life 18(2): 4-14, illus. Feb. 1954.
Concerns big game only; Wyoming. Text and tables give figures on total kill, by species and management unit; hunting statistics; license sales; harvests of each species since 1944; and total kill in terms of weight and meat, by species and age and sex groups; desired and actual kill, by species and management unit.

Bailey, Wayne. (W. Va. Cons. Comm.) WILDLIFE REFUGES?? West Virginia Conservation 17(10): 25-27, illus. Dec. 1953.
West Virginia is opening more and more of its forests and refuges to hunting. It has been found that there are no more turkeys in refuges than in other suitable areas, and that on the most heavily hunted state lands only 12-15% of squirrels are bagged. Ruffed grouse populations cannot be hurt by ordinary hunting. It is concluded: 1. Most upland game, particularly grouse and squirrels, are under-hunted on any extensive forest

WILDLIFE--MANAGEMENT--HARVESTS AND HUNTING--Continued

area of the state. 2. Public lands surrounded by extensive turkey habitat should be open to hunting of turkey and other game except where this is found to be detrimental to turkey hunting in that general area. 3. Game is capable of reproducing to fill its habitat despite normal hunting. 4. Land of a given size and type can support only a specific number of animals of a given species. 5. Failure to harvest a game surplus results in loss of that surplus.

Bell, Ronald O. HUNTING IN WYOMING--PAST AND PRESENT. Wyoming Wild Life 18(2): 23-26. Feb. 1954.
We still yearn for the hunting of the good old days, forgetting that many an old timer ate his horses to survive. This article gives facts and figures that prove the modern Wyoming hunter is mighty well off.

Black, C. T. (Mich. Dept. Cons.) FOURTEEN-YEAR GAME HARVEST ON A 1500-ACRE MICHIGAN FARM. Trans. 18th N. Amer. Wildl. Conf. 421-438 p., graphs. 1953.
On a soil conservation livestock farm under heavy hunting pressure, both the game bag and hunting success appear to reflect population trends of pheasants, rabbits and squirrels. Periods of abundance and scarcity of game may produce increases and decreases in hunting, rather than the reverse. Quantitative data are given on hunting statistics and kill. With heavy hunting in 1939-52 there was a steady decline in game bag and hunting success of pheasants and rabbits. This may be due to habitat losses in converting the farm to livestock use. If so, good land use is not necessarily good game management.--L. F. Stickel.

Johnson, Don, and others. (Nev. Game Comm.) NEVADA GAME HARVEST REPORT, 1952. (Cover title: 1952 Game Kill Report.) Nevada Fish and Game Commission. 5 + 36 p., maps. 1953.
Based on 10% questionnaire sample which, according to checks, gave accuracy to within less than 5%. Harvest and hunting statistics for all legal game (except dusky grouse and cottontail) are stated for each area and are also mapped. It was found that hunters were quite mobile, willing to disperse well over state from population centers. Chukars had become important game, following only ducks and doves in number killed; populations were still expanding. Pheasants were holding up well despite abandonment of game farm.

Pennsylvania. PENNSYLVANIA'S HUNTING RECORD / HUNTING SEASONS AND BAG LIMITS 1915-1952, GAME KILL AND RELATED STATISTICS FROM 1915 THROUGH 1952. Pennsylvania Game Commission. 2 p. folder (opens to 8 x 32 in.). Aug. 1953.
This useful historical summary is everything that the title claims. Where else can one find kill figures for so many species for 38 years? Both large and small game are treated by species, except that waterfowl are grouped. In addition to data on seasons, bag limits, and kill, tables are given on hunting accidents and license sales. Separate sheets tabulating the 1953 game kill and hunting accidents are also available.

Phelps, Chester F. (Va. Comm. Game.) DEER, BEAR, AND TURKEY KILL FOR 1953-54. Virginia Wildlife 15(4): 13. April 1954.
Tables show kill for each species in each county for 3 seasons, 1951-54. Turkey apparently had a good breeding year in 1953, for kill was up 60% from the low of 1952. Kills of all 3 species hit new highs for the period since state-wide tagging became effective. Totals were 11,768 deer, 359 bears, 2,533 turkeys.

Titus, Harold. THE TRUTH IS NOT IN US. Field and Stream 58(3): 36-37, 111-112, illus. July 1953.
Several examples of how inaccurate hunters' kill reports are (usually inflated) and lecture to hunters on importance of keeping and sending in reliable kill records.

WILDLIFE--MANAGEMENT--FARM

Bird, Rex L. (N. C. Wildl. Resources Comm.) SOME OBSERVATIONS ON ALTITUDINAL TOLERANCE OF MULTIFLORA ROSE. Presented at 7th An. Conf., SE Assn. of Game and Fish Commissioners, Chattanooga, Tenn., Oct. 11-14, 1953. 7 p., map and graph.

1500 seedlings were planted in March 1950 at 8 sites in Coweeta Hydrologic Laboratory in southwestern N. C. Altitudes varied from 2,250 to 4,500 feet. All plantings were in good soil, but were semishaded. Plants were not fertilized, cultivated, or pruned, but competed fairly well with weeds. Success was judged by cane length. This rose from 2'6" at 2,250 feet to 6' at 2,500 feet, and dropped to 5" at 4,500 feet. Apparently this plant will not make satisfactory growth at altitudes of more than 3,000 feet under conditions of this test. It might do better with more care and full sunlight.

Durell, Jim, and Chester Stephens. (Ky. Dept. Wildl. Resources.) WANT MORE GAME? IT'S ALL UP TO YOU. Kentucky Happy Hunting Ground 10(1): 11, 26, illus. Jan. 1954.

Primarily a report on the bicolor and multiflora distribution programs in Ky. in 1953. Most bicolor plants were wasted, with only 14% planted in fair or good plots. Each plot cost the Federal Aid section about $111. Figures on multiflora were brighter, with 48% of plants going into good or fair hedges for a total of 140.7 miles of hedge. Cost to department was about $214 per mile, or about $61 per hedge. "These data indicate a very low success in actually getting plots established. In fact only 52 of 120 counties reported good mature shrub lespedeza plots for the seed check." An average of 61% of bicolor seed matured before frost in good plots. Figures for other years varied from 50-87%. Quantitative data are given on seed production of bicolor. Use of questionnaires to appraise quail use of bicolor plots gave limited results of doubtful meaning.

Marshall, William H. (U. Minn.) A SURVEY OF FARM-GAME HABITAT RESTORATION PROGRAMS IN FIFTEEN STATES. Trans. 18th N. Amer. Wildl. Conf. 390-410 p. 1953.

A critical and timely review. Practices in eastern and southeastern states are described and weaknesses are pointed out. Many plantings are partial or complete failures. Many others do not meet needs of their sites. Bicolor stands are often taken over by other plants. Their usefulness is short unless rejuvenated. Regional differences in bicolor performance are marked. Multiflora requires much care for good establishment and poor hedges are common. It has considerable tendency to spread, especially in the east. Its wildlife value remains to be shown. Value of conifer plantings lessens as trees mature. Various shrubs used have no demonstrated wildlife value and their permanence is unknown. But good native shrubs may be ripped out to put them in. Encouragement of field crops that have wildlife value is all to the good. So is the small marsh program. Cut borders are promising but present large maintenance problems. Some management areas seem to be overplanted. The best points of state programs are indicated. Suggestions are made for evaluation and research. We particularly need to know actual values to wildlife of a given practice, permanence and maintenance needs of plantings, costs in relation to wildlife yield, and how to meet the wildlife needs of a given site.

Salter, Robert M. (U. S. Soil Cons. Service.) WILDLIFE AND OUR SOIL CONSERVATION OBJECTIVES. Trans. 18th N. Amer. Wildl. Conf. 81-91 p. 1953.

Gives examples of soil conservation and other land use practices that have aided wildlife, and maintains that a sound middle ground can be found in management of land for farming and wildlife.

WILDLIFE--MANAGEMENT--FARM--Continued

Shaffer, C. H. (Va. Comm. Game.) A METHOD OF EVALUATING FARM GAME PLANTINGS. Presented at 7th An. Conf., SE Assn. of Game and Fish Commissioners, Chattanooga, Tenn., Oct. 11-14, 1953. 1-7 p.

The Va. program of getting lespedeza and food-patch plantings onto farms soon ballooned into a huge distribution project. It was found that much planting material was discarded or wasted, instructions were ignored, and wrong sites were planted. The same approach had been taken on sandy coastal plain as on mountain slopes. Most plantings were made in regions where wildlife conditions were good, fewest where most needed. Early frosts were causing much loss of L. bicolor seed. Older plantings in eastern Va. were commonly invaded and ruined by honeysuckle. With this situation in mind, a system for rating plantings was devised and 1339 plantings were rated. It was found that only 6% had been cultivated and only 23% had been fertilized. Nevertheless, about half of all new plantings were considered satisfactory on grounds of size, site, and condition. It was concluded that cooperators must be selected more carefully and guided more fully. Biologists should give more attention to fewer cooperators. Cultivation, fertilization, and other maintenance should be emphasized. Quality rather than quantity should be the goal.

Steen, M. O. (Mo. Cons. Comm.) ESSAY ON EVOLUTION. Missouri Conservationist 15(3): 1-3, 12, illus. March 1954.

Instead of subsidizing the farmer to grow soil-depleting, surplus crops, why not pay him to plant his surplus acres to soil-building legumes, particularly deep-rooted legumes? We would gain much-improved soils and the 30 million acres retired to legumes would be extremely favorable to farm game. "Under the proposed program...we would be building up, not tearing down our own environment; we would be paying the premiums on insurance that will stabilize farm economy and protect the future well-being of all America! "

[White, Andrew J. (quoted)] (Motor Vehicle Research, South Lee, N. H.) SAFER SUPERHIGHWAYS. Soil Conservation 19(9): 216. April 1954. Reprinted from Science News Letter for Dec. 12, 1953.

Rosa multiflora planted along highways could cut traffic deaths. Masses of this rose gently stop cars going 30 mph. and it is thought they would do much good for even faster moving cars. The plant meets requirements better than any other found. Other highway values of the plantings would be: reduced headlight glare, reduced wind gusts, and fewer domestic animals on road. Plantings might also double as snow fences. Cost estimates are 5¢ per foot of road. [Possible wildlife values of extensive planting of multiflora might be somewhat lessened by increased highway kill of wildlife.]

WILDLIFE--MANAGEMENT--FOREST AND RANGE

Anonymous. BIG GAME RANGE RESEEDING. Oregon State Game Commission Bulletin 9(3): 5, illus. March 1954.

Lotus major (big trefoil) proved the best plant to establish for game food on burns in northwestern Ore. It is vigorous, long-lived, and spreading. It is adapted to acid soils of low fertility, has high protein content, and withstands heavy utilization. Deer and elk make good use of it. Sportsmen and game commission men seeded 870 acres in 1953 alone by broadcasting seed during winter.

Evanko, Anthony B. PERFORMANCE OF SEVERAL FORAGE SPECIES ON NEWLY BURNED LODGEPOLE PINE SITES. U. S. Forest Service, Northern Rocky Mountain Forest and Range Experiment Station (Missoula, Mont.), Research Note no. 133. 1-7 p., illus. Dec. 1953.

Dense stands of young pine have little growth and little grazing value. Plots were experimentally cleared and burned. Various grasses and legumes were seeded in the ashes. Certain species did well for several years, depending on site, and some were heavily used by deer and other wildlife. The paper is a preliminary guide to management of such areas.

WILDLIFE--MANAGEMENT--FOREST AND RANGE--Continued

Henze, Otto. BIRD BOX MANUAL FOR FOREST PROTECTION (Kontrollbuch für Vogelnistkästen in der Forestwirtschaft.) 2nd edition. Staatliche Vogelschutzwarte. Garmisch-Partenkirchen. 122 p. 1949. [From review by Frances Hamerstrom, Journal of Wildlife Management 18(2).]

German foresters have attained pure stands of spruce that are free of dead trees, weed trees, and wolf trees. And they are nearly free of birds. The man-made plantations are far more subject to climatic and pest damage than are natural woods. Foresters are struggling to undo mistakes of the past by breaking up monotypes and developing mixed stands. Part of the effort is to encourage birds in forests by putting up nest boxes. "Henze goes into meticulous detail covering: relationship between potential insect damage and suggested density of bird boxes, their placement, annual cleaning, numbering, repair and record keeping; also predator control, winter feeding and water for the birds. He suggests maintaining a sufficient density of bird boxes to keep down pest outbreaks before they can get started. The author does not claim that this is sure to work... My main point in bringing this book to the attention of the American readers is not whether or not pests can be controlled by birds, but to show that artificiality has brought things to such a pass that bird boxes are seriously considered by the German Forest Service."

Kitchens, Jim, Lyle S. St. Amant, Leslie L. Glasgow, and others. LET'S GET TOGETHER! Louisiana Conservationist 6(6): 2-6, 16, 20, illus. March 1954.

Significant discussion of forest and wildlife management in the South. Principles involved apply in all forest regions. Kitchens, Executive Secretary of La. For. Assn., leads off with article stressing fact that timber production must be prime consideration in commercial forests, but points out that forest and wildlife interests coincide in many ways, and that many foresters and owners would be glad to make economically feasible alterations in their forestry plans to benefit wildlife if they knew how and had good practical advice. He recommends close cooperation and preparation of a manual. In short following articles, 3 wildlife biologists and 3 foresters comment on Kitchens' points and proposals. All agree that cooperation is desirable, but the wildlife men feel that Kitchens underestimates the financial importance of game and the general desirability of multiple use of both public and private forests. They also take issue with him on a few technical points, such as desirable number of den trees, and seed yield of trees under forest management.

Moody, Raymond D. (La. Wildl. Comm.) MAST PRODUCTION OF CERTAIN OAK SPECIES IN LOUISIANA. Presented at 7th An. Conf., SE Assn. of Game and Fish Commissioners, Chattanooga, Tenn., Oct. 11-14, 1953. 1-25 p.

Detailed report, with many tables, of productivity of bottomland timber oaks and upland scrub oaks. The latter are weeds to the forester and are being widely eliminated from southern pine stands, a practice of doubtful value to wildlife. Acorn traps were used in the project. Soundness, nutritive value, and wildlife use of acorns were studied. Density, diameters, heights, crown classes, and ages of trees were determined. Annual variation in acorn yield and weight was ascertained. The multitude of quantitative results reported cannot be summarized here. For all species studied, larger trees (Dbh 10 inches or more) were best producers. Also, those with dominate or codominant crowns were best producers. Scrub oaks produced less mast than bottomland oaks, but their acorns had higher nutritive value. Acorns were used most by birds, squirrels, and hogs.

Yeager, Lee E., and Laurence E. Riordan. (Colo. A & M Coll.) EFFECTS OF BEETLE-KILLED TIMBER ON RANGE AND WILDLIFE IN COLORADO. Trans. 18th N. Amer. Wildl. Conf. 596-616 p., graphs. 1953.

Results of 4 years of study in region where 600,000 acres of spruce were beetle-killed. Ecology of the spruce-fir type is explained. Quantitative data are given on changes in vegetation and on populations of birds and small

WILDLIFE--MANAGEMENT--FOREST AND RANGE--Continued

mammals. Herbaceous ground cover increased markedly in dead spruce stands. Browse did not, probably because of disease of chief browse plant (Vaccinium). Death of spruce and increase of herbs was beneficial to deer, chipmunks, meadow mice and other animals. It was detrimental to pine squirrels, pine grosbeaks, and probably other small birds. Not clearly affected were snowshoe hares, Canada jays, white-footed mice and red-backed mice. Woodpeckers first increased in dead stands and helped control beetles, then declined with the beetles.

WILDLIFE--MANAGEMENT--WET-LAND

Barbehenn, Kile. (Cornell U.) THE EFFECTS OF DUCKS ON THE DEVELOPMENT OF FILAMENTOUS ALGAE IN FARM FISHPONDS. New York Fish and Game Journal 1(1): 110-115. Jan. 1954.

"The results are rather conclusive in assessing the potentialities of ducks as controllers of algae. Under normal conditions, neither mallards nor domestic ducks make any appreciable reduction in the development of algal growths in farm fishponds. Under conditions of high concentration, mallard ducks may reduce the size of the mat through agitation or may slow up development by increasing turbidities, but they are unable to control undesirable amounts of filamentous green algal growth."

Dutton, Pete. (La. Wild Life Comm.) WATER HYACINTH CONTROL. Louisiana Conservationist 6(5): 18-20, illus. Feb. 1954.

Chiefly a discussion of effective modern equipment for varied methods of attack.

Maciolek, John A. (US F&WS.) ARTIFICIAL FERTILIZATION OF LAKES AND PONDS / A REVIEW OF THE LITERATURE. U. S. Fish & Wildlife Service, Special Scientific Report: Fisheries no. 113. 1-41 p. Jan. 1954.

Summary and discussion of literature, with 8 pages of references.

MacNamara, L. G. (N. J. Div. Game.) MOSQUITO CONTROL FROM THE STANDPOINT OF FISH AND GAME MANAGEMENT. New Jersey Outdoors 4(10): 4-9, illus. April 1954.

Material similar to that presented earlier. See WR 70: 13 and WR 75: 21 & 22.

Office of River Basin Studies. (US F&WS.) REPORT ON THE RELATION OF WILDLIFE TO AGRICULTURAL DRAINAGE AND ECONOMIC DEVELOPMENT OF COASTAL MARSHES IN CAMERON PARISH, LOUISIANA. U. S. Fish and Wildlife Service, Washington, D. C. vii + 80 p., map. 1951.

Threinen, C. W., and Wm. T. Helm. (Wis. Cons. Dept.) EXPERIMENTS AND OBSERVATIONS DESIGNED TO SHOW CARP DESTRUCTION OF AQUATIC VEGETATION. Journal of Wildlife Management 18(2): 247-251. April 1954.

Evidence that carp are destructive of aquatic plants. "Should one be looking for signs of carp abundance, openings in the vegetation rather than the depletion of individual species of aquatic plants appear to be a good indicator. Fencing off a bay was successful enough to say that the practice has promise in protecting the vegetation of shallow bays for waterfowl."

Tryon, C. A., Jr. (U. Pittsburgh.) THE EFFECT OF CARP EXCLOSURES ON GROWTH OF SUBMERGED AQUATIC VEGETATION IN PYMATUNING LAKE, PENNSYLVANIA. Journal of Wildlife Management 18(2): 251-254. April 1954.

From summary: "2. The three-year average annual growth of submerged aquatics was 3.9 grams of air-dried vegetation per square meter in fenced quadrats and 1.4 grams per square meter in unfenced quadrats. 3. It appears likely that the rooting and splashing habits of carp are responsible for differences in production of submerged aquatics although other causes may be responsible."

WILDLIFE--MANAGEMENT--WET-LAND--Continued

White, Keith L. (Wis. Cons. Dept.) THIS MARSH IS MANAGED FOR PRODUCTION. Wisconsin Conservation Bulletin 18(2): 21-24, illus. Dec. 1953.
How the Willie brothers are commercially managing for wildlife a 234-acre Wisconsin marsh that formerly produced little but hay. They had the marsh diked from the river, then with a home-made dredge they dug over 12 miles of level ditches for muskrats. Also, huge furrows ploughed from ditches into marsh provided more muskrat food and access to feeding areas. Muskrat production rose from 35 in 1944 to about 1,400. Waterfowl breeding increased greatly, aided by stumps and logs placed on marsh. Waterfowl hunting is now good. Spoilbanks were planted to food-bearing trees and shrubs, and winter feeders are maintained for pheasants. Rabbits have become abundant, and damage plantings. Minnows are reared profitably in special ditch-ponds. Turtles are collected and sold. For several days each fall, 500 lbs. of frogs are harvested per day. The marsh as now managed is far more productive than if left natural or drained and farmed.

WILDLIFE--MANAGEMENT--PREDATION, CROP DAMAGE, AND CONTROL

Buell, Noble E. (US F&WS, Box 37, Mitchell, S. D.) RODENT CONTROL IN THE SHELTERBELT. South Dakota Conservation Digest 21(2): 8-10, 13, illus. Feb. 1954.
Rabbits and mice may do severe damage to shelterbelt and other plantings. Formulas are given for a nontoxic rabbit repellent, for a strychnine-base rabbit poison, and for a strychnine-base field mouse poison. Detailed instructions are given for using these mixtures. Clean cultivation is also recommended for control of rabbits and mice. [One wonders what men who are striving to get game cover on farms will think of recommendations for cultivation clean enough to eliminate even mice.]

Howard, Walter E. (U. Calif. at Davis.) RODENT CONTROL ON CALIFORNIA RANGES. Journal of Range Management 6(6): 423-434. Nov. 1953.
Is control of range rodents good or bad? Should coyotes be protected because of the rodents they eat? This review paper (42 references) discusses these questions at length on the basis of what factual information we have. The author concludes that it is often necessary to control range rodents and that coyotes cannot begin to do the job for us. "Original fauna and flora will have to be preserved in places such as national parks." [The numerous naturalists who hold opposing views should at least give Howard's arguments and figures close study. Too much of this opposition is purely emotional and as such carries little weight in economic decisions.]

Latham, Roger M. (Pa. Game Comm.) AN ANALYSIS OF THE PENNSYLVANIA BOUNTY SYSTEM. Trans. 18th N. Amer. Wildl. Conf. 158-166 p. 1953.
Suggestions are made for increasing efficiency of the fox-bounty, namely increased bounty payments when the population is low, and a bounty license to eliminate 1-fox claims. It is recommended: that weasels be removed from the bounty list, that the bounty on horned owls be removed during November and December, that pole traps be outlawed from April to October, that the goshawk be kept off the bounty list, and that no additional animals be added. [See also WR 66:3; 67:11; 70:14.]--L. F. Stickel.

Sampson, Frank W. (Mo. Cons. Comm.) EIGHT YEARS OF EXTENSION PREDATOR-CONTROL IN MISSOURI. Presented at 15th Midwest Wildlife Conference, Chicago, Ill., Dec. 9-11, 1953. 1-7 p. + 2 p. tables.
Bounties and salaried hunters failed to stop the flow of damage complaints, so the extension-trapper system was adopted. This article tells just how it works and what results have been. Farmers in groups are taught to do their own control trapping, and are given further instruction if needed. Farmers appreciate the system. "Prompt and effective action under the extension program has reduced the number of complaints received by the Conservation Commission almost to zero." Questionnaire returns (tabulated) show that damage has been greatly reduced, enough so to pay farmers well for their time, and that farmers usually trap just enough to get the foxes or coyotes actually doing harm.

WILDLIFE--REPORTS OF ORGANIZATIONS

Alabama. DEPARTMENT OF CONSERVATION / STATE OF ALABAMA / REPORT FOR FISCAL YEAR OCTOBER 1, 1952--SEPTEMBER 30, 1953. 1-175 p., illus. [1954.]
Report of the Division of Game and Fish (p. 89-138) gives information on: status and estimated kill of deer and turkey, status and trends of other game species, status and estimated catches of fur species, deer and turkey releases, and predator control. Projects and activities of PR and Cooperative Wildlife Research Units are briefly described. Deer and turkey were still increasing. Quail hunting was poor, probably because of dry weather during and after breeding season. Study of quail wings, however, suggested a satisfactory breeding season, with 76.9% young. The contradiction is not discussed. Rabbits remained at a peak. Squirrel populations improved following good mast crops. Dove hunting was better, owing largely to unusual dove concentrations during season, but population was up by at least 8%. Trichomoniasis loss was small. Fur catch was down, chiefly because of low pelt prices. It was found that cottontails could be trapped in summer with bait of oatmeal, corn, and table salt.

Anonymous. FEDERAL AID IN FISH AND WILDLIFE RESTORATION / ANNUAL REPORTS OF THE DINGELL-JOHNSON AND PITTMAN-ROBERTSON PROGRAM FOR THE FISCAL YEAR ENDING JUNE 30, 1953. Wildlife Management Institute and Sport Fishing Institute, Washington 5, D. C. 1-95 p., illus. No date. Received Jan. 1954.
Describes numerous accomplishments, lists projects (and their costs) of each state, and includes tables showing finances and land purchases.

Conservation Foundation. ANNUAL REPORT FOR THE YEAR 1953. Conservation Foundation, 30 E. 40th St., N. Y. 16, N. Y. 1-22 p. [1954.]
This foundation is financed by other foundations, corporations, and individuals. Its purpose is to catalyze research and education on fundamental problems. The research program has been successful, with several of the projects described in earlier reports (see WR 73: 25) having been published and others nearing completion. A list of publications is loosely inserted in this report. Projects still under way include a survey of soil erosion in the Western Hemisphere, marine resources, and human populations vs. resources. Emphasis is now being placed on public education in conservation. Too few people think about conservation; too many research reports become dust-catching references. These trends the foundation is striving to reverse. Plans are being laid for effective liaison with publishers, broadcasters, and legislators.

Idaho. TWENTY-FOURTH BIENNIAL REPORT OF THE FISH AND GAME DEPARTMENT OF THE STATE OF IDAHO, JULY 1, 1950 TO JUNE 30, 1952. 1-80 p., illus. [1953.]
Includes: populations and kills of big game species; salting; trapping and transplanting big game; supplementary feeding of big game; experimental range improvement; status of upland game birds, by species; habitat improvement for these birds; game farm records; list of projects of Cooperative Wildlife Research Unit; brief descriptions of PR projects; fur harvest; beaver management; predator control. Figures are given on heavy loss of deer and elk around winter feeding stations. "...It is very evident that the poorer condition the winter range is in, the heavier the loss of game sustained when supplemental feeding is done... Winter feeding of game appears to be a temporary emergency measure and not a solution to winter starvation losses." Ruffed grouse were not being adequately harvested, so more liberal regulations were adopted. Sharp-tail grouse were in danger of extermination in Idaho. Quail and Hungarian partridge were generally underharvested, but interest in them was growing. In the program to get pheasant food and cover on crop lands, the state found it necessary to do almost all planting and maintenance, leaving little up to landowner. Beaver are being managed through caretaker-trapper system in which trapper has a definite area within which he is responsible for protection, proper harvesting, and damage control.

WILDLIFE--REPORTS OF ORGANIZATIONS--Continued

McKay, Douglas. 1953 ANNUAL REPORT, SECRETARY OF THE INTERIOR, FOR THE FISCAL YEAR ENDED JUNE 30. U. S. Printing Office, D. C. xl + 388 p., graphs. [1954.] $1.25 from Superintendent of Documents.

Expresses departmental policy and reports in fair detail the plans, projects, and accomplishments of each bureau. Only a few points of interest can be selected for mention. As to policy, by law "it is the basic mission of the Department to dispose of or to integrate the public domain with the private economy as rapidly as is feasible with the continuing objective of the wisest and soundest use. The fact that more than one billion acres of public land have been disposed of directly to the States or to private individuals or associations...is symbolic of the national policy..." (p. xxix). Bureau of Land Management: Applications for public lands increased 50% over 1952. Disposition of public lands amounted to 360,000 acres in the year (p. 76). Fish and Wildlife Service: A device was designed and tested for making artificial mouse trails and depositing in them poison baits for control of orchard mice (p. 232). Acquisition of refuge lands becomes harder each year because of economic involvement of remaining wetlands (p. 234). Refuge additions in the year totalled 12,753 acres, about equal to 1 medium-sized refuge (p. 238). Predator control in northern Mexico was good enough that for the first 6-month period in history no wolf was taken in southern N. M. in the last half of 1953 (p. 245). National Park Service: Demands mounted for hunting elk in Yellowstone Park, for killing bears in Great Smoky Mts. Park, and for exterminating prairie dogs and "similar undesirable animals" in national parks. Two of these requests were from state legislatures (p. 301).

New Jersey. ANNUAL REPORT / NEW JERSEY DEPARTMENT OF CONSERVATION AND ECONOMIC DEVELOPMENT / DIVISION OF FISH AND GAME / FOR THE FISCAL YEAR COMMENCING JULY 1, 1952 AND ENDING JUNE 30, 1953. 1-51 p. Received March 1954.

Includes: game farm reports; brief descriptions of research and management projects; harvest of beaver and deer, by counties; and numbers of "predatory vermin" of 15 species taken for control. The list of "predatory vermin" includes squirrel, raccoon, mink, and muskrat. Game farm birds released were 67,236 pheasants and 23,142 quail. In addition, 19,459 cottontails and 197 jackrabbits were purchased and released.

North Dakota. GAME AND FISH DEPARTMENT / ANNUAL REPORT / JULY 1, 1952 TO JUNE 30, 1953. 1-48 p., illus. [1954?]

Includes: discussion of parts of Gabrielson's survey of department and what has been done to meet its recommendations; waterfowl harvest 1949-52, and by species, 1952; trends in breeding waterfowl population, 1948-53; 1953 waterfowl nesting conditions; summaries of results of studies of pheasant, sharptail, ruffed grouse, antelope, and deer (harvest and census statistics); progress in habitat improvement for pheasants; status of mammalian small-game species; status and harvests of fur-bearer species; detailed report on state's first open season on beaver since 1921 (total take 6,755); and report on game farm, which was reactivated in 1953.

Nova Scotia. REPORT OF THE DEPARTMENT OF LANDS AND FORESTS, 1952. Queen's Printer, Halifax. 1-82 p., illus. 1953.

The report on wildlife (p. 53-74) includes: status of moose (kill by counties, 1908-37) and moose sickness; deer harvest, by counties 1916-52 (overpopulations now in southwestern counties); status of snowshoe hare (increasing, but probably will never reach former abundance because of deer competition); pheasant stocking and kill (pheasants are established and doing well in some localities); bears bountied, 1942-52; numbers of pelts exported, by species and county (red foxes decreasing, with sickness widely reported); status and harvest of beaver.

WILDLIFE--REPORTS OF ORGANIZATIONS--Continued

Rutherford, Robert M. (US F&WS.) FIVE YEARS OF PITTMAN-ROBERTSON WILDLIFE RESTORATION 1949-1953. Wildlife Management Institute. 1-167 p., illus. 1954.

The most interesting part of this report is the 64-page section that tells of results obtained in studies of game and fur-bearing animals. It is arranged by species or group, and the examples it discusses give a good picture of recent progress and trends in game management. Other sections explain the PR system, list all projects, and give financial statements. It is worth noting that while the Fish and Wildlife Service is authorized to use as much as 8% of total PR funds for administration of the program, actual administrative costs have been held down to 4.1%.

Saskatchewan. ANNUAL REPORT OF THE DEPARTMENT OF NATURAL RESOURCES... FOR THE FISCAL YEAR ENDED MARCH 31, 1953. Regina, Queen's Printer. 1-177 p., illus. 1953.

Report of Game Branch (p. 119-134) includes interestingly presented data on: Northern Fur Conservation Program; beaver conservation and harvest; muskrat status and harvest; waterfowl (good breeding, less crop damage); status and harvests of upland game birds, deer, elk, moose, and antelope; control of wolves and coyotes; research projects (brief descriptions); and fur farms. Graphs show take of muskrat, weasel, beaver, and mink, 1920-53. A table summarizes (by species) numbers and values of pelts of wild animals taken in 1951-52 and 1952-53. A disease appeared in beavers of some areas. Symptoms were very similar to those of tularemia, but "it is now known that tularemia was not present."

Wyoming. ANNUAL REPORT OF THE WYOMING GAME AND FISH COMMISSION 1952. 1-71 p., illus. 1953.

Big game harvests, by species, 1942-52; kill of big game, by species and management unit, 1952; hunting statistics, 1952; big game inventory, by species, 1949-52; big game damage and costs of feeding; beaver harvest, 1943-52; game farm records; reports of progress in PR projects; striking correlation between number of licenses sold and total big game kill, 1941-52.

MAMMALS--GENERAL

Banfield, A. W. F. (Canadian Wildl. Service, Banff, Alberta.) THE ROLE OF ICE IN THE DISTRIBUTION OF MAMMALS. Journal of Mammalogy 35(1): 104-107. Feb. 1954.

Importance of ice floes and ice bridges in travel, ranges, and taxonomy of mammals. Marked reindeer have been known to travel as much as 380 kilometers over frozen seas between islands. Hibernators cannot take advantage of ice and may be limited by minor water barriers.

Griffin, D. R. PHYSIOLOGICAL THERMODYNAMICS OF ARCTIC ANIMALS. In Science in Alaska 1951, Proceedings 2nd Alaskan Science Conference, Alaska Div. AAAS. 93-97, graphs. [1953.]

Discussion of experiments on insulating value of fur on living animals.

Irving, Laurence. STUDIES ON PHYSIOLOGICAL ADAPTATION TO COLD IN ARCTIC MAMMALS. In Science in Alaska 1951, Proceedings 2nd Alaskan Science Conference, Alaska Div. AAAS. 113-117. [1953.]

General discussion of some problems and findings.

Johnson, H. M. PRELIMINARY ECOLOGICAL STUDIES OF MICROCLIMATES INHABITED BY THE SMALLER ARCTIC AND SUBARCTIC MAMMALS. In Science in Alaska 1951, Proceedings 2nd Alaskan Science Conference, Alaska Div. AAAS. 125-131 p., graphs. [1953.]

Data on local thermal stratification, especially through and under snow. Results are discussed briefly in connection with animal habits.

MAMMALS--GENERAL--Continued

Rodeck, Hugo G. (U. Colo. Mus.) UNIFORMITY OF COMMON NAMES OF MAMMALS. Journal of Mammalogy 35(1): 142-144. Feb. 1954.
Rejects for various reasons Hoffmeister's suggestion that the common names of Burt's Field Guide to the Mammals be adopted as standard, and discusses a number of the complexities of fixing common names. The author's closing remarks are especially important: "A list of standardized names arbitrarily assigned by any one person, or even a small group of persons, is almost certain to be just as arbitrarily rejected in whole or in part by those whose special interest, special knowledge, or regional peculiarities have been offended. The proper procedure would seem to be the publication, perhaps through several revisions, of a proposed list, inviting criticisms, suggestions, and alternative proposals."

MAMMALS--FAUNAS AND MANUALS

Baker, Rollin H., and James S. Findley. (U. Kans.) MAMMALS FROM SOUTHEASTERN ALASKA. University of Kansas Publications, Museum of Natural History 7(5): 473-477. April 1954.
Taxonomic notes on 9 species from various localities.

Dalquest, Walter W. MAMMALS OF THE MEXICAN STATE OF SAN LUIS POTOSI. Louisiana State University Studies, Biological Science Series no. 1. [vi] + 229 + [3] p., map. Dec. 1953. $3.50 from La. St. U. Press.
A welcome addition to the growing number of monographs on Mexican mammals. The book briefly describes the state and its zoogeographic regions and life zones, and contains gazetteer, bibliography, and index. Species and subspecies accounts, which comprise the bulk of the volume, give scientific and common name, type locality, description, measurements (usually for few specimens), distribution, list of specimens, and natural history. Natural history sections are based principally on the author's observations and treat such topics as habitat, status as game or pest, abundance, foods, and reproduction. It is interesting to note that wolves seem to be increasing and that "domestic livestock, especially burros, seem to constitute their principal food. At Hacienda Bledos and in the surrounding countryside wolves virtually exterminated the burros in the course of one year. The animals have become so bold that even burros tethered near homes are killed."

Davis, W. B., and R. J. Russell. (Texas A & M Coll.) MAMMALS OF THE MEXICAN STATE OF MORELOS. Journal of Mammalogy 35(1): 63-80. Feb. 1954.
Faunal relationships and long annotated list.

Jones, J. Knox, Jr. (3001 Georgian Ct., Lincoln 2, Nebr.) DISTRIBUTION OF SOME NEBRASKAN MAMMALS. University of Kansas Publications, Museum of Natural History 7(6): 479-487. April 1954.
Range extensions (or important localities) and subspecific determinations for 13 species.

Polder, Emmett. (Loras Coll.) A CHECK LIST OF MAMMALS OF PRESENT OCCURRENCE IN IOWA WITH NOTES ON NEW ADDITIONS AND DISTRIBUTION SINCE 1937. Iowa Academy of Science 60: 716-724. 1953.

Soper, J. Dewey. THE MAMMALS OF RIDING MOUNTAIN NATIONAL PARK, MANITOBA, CANADA. Canadian Wildlife Service, Wildlife Management Bulletin, Series 1, no. 7. 1-34 p. + 5 p. of illus. 1953 (titlepage), Dec. 1952 (cover). Received Jan. 1954.
Describes area and its life zones and flora. Annotated list of 53 species and subspecies gives information on distribution in park, abundance, fluctuations, habitats, and measurements.

Villa R., Bernardo. MAMIFEROS SILVESTRES DEL VALLE DE MEXICO. Anales Inst. Biol., Mexico, vol. 23, nos. 1-2. 269-492 p. 1952. [From Journal of Mammalogy 35(1).]

MAMMALS--COMMUNITIES, NUMBERS, HOME RANGES

Dice, Lee R., and Philip J. Clark. (U. Mich.) THE STATISTICAL CONCEPT OF HOME RANGE AS APPLIED TO THE RECAPTURE RADIUS OF THE DEERMOUSE (PEROMYSCUS). University of Michigan, Contributions from the Laboratory of Vertebrate Biology no. 62. 1-15 p., graphs. Feb. 1953. 25¢ from U. Mich. Press.

Recapture records for P. m. bairdi in a relatively uniform habitat are treated statistically to reveal the probability of capture at different distances from the "center of activity" as defined by Hayne. The approach is designed to avoid the problem of having to express size of home range in concrete terms, for it is agreed by all workers that home ranges rarely have fixed limits.

Fitch, Henry S. (U. Kans.) SEASONAL ACCEPTANCE OF BAIT BY SMALL MAMMALS. Journal of Mammalogy 35(1): 39-47, graphs. Feb. 1954.

"Marked changes in trapping success probably are more often caused by change in bait acceptance than by change in actual population density of the animals. My experience with 14 kinds of small mammals, at three localities, in northeastern Kansas, central Louisiana and central California, is summarized in the following accounts." Trapping success often is least when natural foods are most abundant. Trapping may be good during population lows, poor during highs. Trappers may be greatly deceived about the size of population they are studying.

Stickel, Lucille F. (Patuxent Refuge, Laurel, Md.) A COMPARISON OF CERTAIN METHODS OF MEASURING RANGES OF SMALL MAMMALS. Journal of Mammalogy 35(1): 1-15, graphs. Feb. 1954.

Artificial populations are used to compare different methods of measuring home ranges. A boundary strip method of measuring area and an adjusted range length gives sizes closer to the true range than do minimum area and observed range length methods. In simulated trapping, the known range size increases with successive captures and then levels off in a pattern similar to that obtained in field studies. The number of captures required to approximate the range size is affected by pattern of trap visiting, range shape and trap spacing. Field studies show that average range measurements are biased if traps are too far apart to include at least two in the range of each individual. In an artificial population, with limited captures per individual, differences in trap spacing altered the apparent size of range, even though traps were visited at random. The desirability of excluding travels outside the normal range from home range calculations is discussed.--L. F. Stickel.

Wagner, Helmuth O. ZUR POPULATIONSDYNAMIK DER KLEINNAGER IN DEN TROPEN UND IHRE URSACHEN. Bonner Zool. Beiträge, Heft 1-2. 1-12 p. 1953. [From Journal of Mammalogy 35(1).]

MAMMALS--PARASITES AND DISEASES

Adlam, G. H. (Canada Dept. Agr., Calgary.) OBSERVATIONS ON RABIES. Canadian Journal of Comparative Medicine and Veterinary Science 17(10): 418-421, illus. Oct. 1953.

Notes on rabies in wild and domestic mammals in Alberta in 1952. Interesting data on actions of rabid wolf and foxes.

Langford, E. V. (Canada Dept. Agr., Lethbridge, Alberta.) AN OUTBREAK OF TULAREMIA IN BEAVER AND MUSKRAT IN WATERTON LAKES NATIONAL PARK, ALBERTA. Canadian Journal of Comparative Medicine and Veterinary Science 18(1): 28-30. Jan. 1954.

Nine beavers and 1 muskrat were found dead during winter of 1952-53. Study of 2 beavers and the muskrat resulted in diagnosis of tularemia. "Two out of ten water samples submitted from streams in the Park on April 3rd were found to contain P. tularensis. Water samples submitted at a later date were negative."

MAMMALS--PARASITES AND DISEASES--Continued

Ryckman, R. E., K. C. Fisher, and C. T. Ames. (School of Tropical and Preventive Medicine, Loma Linda, Calif.) AN APPARATUS FOR COLLECTION OF ECTOPARASITES FROM MAMMALS. California Fish and Game 40(1): 75-76. Jan. 1954.

Collecting bottle connected to tube of vacuum cleaner, with outgoing tube finely screened.

Schiller, E. L. (Arctic Health Res. Center, Anchorage, Alaska.) STUDIES ON THE HELMINTH FAUNA OF ALASKA. XIX. AN EXPERIMENTAL STUDY ON BLOWFLY (PHORMIA REGINA) TRANSMISSION OF HYDATID DISEASE. Experimental Parasitology 3(2): 161-166, illus. March 1954.

Reports experimental infection of Microtus and Clethrionomys with Echinococcus cysts through transmission of eggs by blowfly. Habits of blowflies give them many chances to pick up the eggs. The relationship may have human health significance in northern Alaska and St. Lawrence Island. [It may also contribute toward maintenance of hydatid tapeworms in caribou and wild canines. The disease has been reported frequently from caribou.]--C. M. Herman.

MAMMALS--CONTROL, MORTALITY

Eadie, W. Robert. (Cornell U.) ANIMAL CONTROL IN FIELD, FARM AND FOREST. Macmillan Co., N. Y. viii + 257 p. 1954. $3.75.

Best and most up-to-date book on control of injurious mammals. Dr. Eadie's approach is fair and balanced. It should, insofar as possible, satisfy both controllers and preservationists. All groups of American mammals that may attain pest status are included. Each group is discussed under the headings Identification and Habits, Economic Status, Control, Natural Enemies, and References. A voluminous literature has been covered, cited, and digested for the reader. Material is interestingly presented and easily read. The book is far more than a control manual: it is virtually a text in economic mammalogy. It is almost a natural history, having much information on habits, ecology, food habits, and damage done. Indeed, sections on control probably occupy no more than 1/3 of the space. Control is treated in detail, however, and is treated clearly and ably, except that relative values of different methods are not always brought out. For example, barium carbonate for rat control is given full attention although hardly used today. No book in a rapidly progressing field can be strictly up to date. This is apparent in discussions of repellents; tetramine, valuable in protecting forest seed, is not mentioned. Aerial distribution of baits for cotton rats and other animals is not new but is not mentioned, possibly because it is a purely professional technique. Harder to understand is omission of standard techniques of controlling nuisance bears: hunting with dogs and steel trapping. The statement of wolf distribution is misleading because it treats C. lupus and C. niger together, and implies that populations exist in some states where there are only stragglers. Few such criticisms can be made, however, and in general the book can be highly recommended.--C. C. Presnall and W. H. Stickel.

Welch, Jack F. (US F&WS, Denver 2, Colo.) RODENT CONTROL / A REVIEW OF CHEMICAL REPELLENTS FOR RODENTS. Agricultural and Food Chemistry 2(3): 142-149, illus. Feb. 1954.

Long, factual article with several tables. Topics include: methods of screening and field-testing repellents; substances most repellent to rats, and results of tests of them; methods of applying repellents to packaging; merits and demerits of various types of carriers or adhesives; repellents now thought best for rabbits, deer, white-footed mice, meadow voles, and porcupines; promising trials of making areas or vertical seams of earth rodent-repellent. Much work remains to be done in finding ideal methods of repelling rats and other mammals, but a surprisingly large number of worthwhile repellents is already known.

MAMMALS--SHREWS, MOLES, BATS

Courter, Robert D. (U. S. Public Health Service, Atlanta, Ga.) BAT RABIES. Public Health Reports 69(1): 9-16. Jan. 1954.
A rabid Dasypterus attacked a boy at Tampa, Fla., and a rabid but unidentified insectivorous bat attacked a woman near Carlisle, Pa. Rabies virus was found in brains of apparently normal Dasypterus and Lasiurus. There is some circumstantial evidence that vampire bats may occur in Southern California. Vampire bats have long been known to be important rabies vectors, but it is less well known that insectivorous and frugivorous bats that have the disease may attack and infect man and animals. The present paper is a good technical review of the whole bat rabies problem in the Americas. Among control measures recommended are destruction of bat colonies in trouble areas, bat-proofing of homes and barns, and immunization of livestock.

Crowcroft, Peter. (Bur. Animal Population, Oxford, Eng.) THE DAILY CYCLE OF ACTIVITY IN BRITISH SHREWS. Proceedings of the Zoological Society of London 123(4): 715-729, graphs. Feb. 1954.
Activity patterns of captives were studied by means of electrical devices.

Fay, Francis H. (U. Brit. Col., Vancouver.) QUANTITATIVE EXPERIMENTS ON THE FOOD CONSUMPTION OF PARASCALOPS BREWERI. Journal of Mammalogy 35(1): 107-109. Feb. 1954.
"...the average daily consumption of earthworms was equal to more than 300 per cent of the body weight." Other investigators have reported lower intake when more calorific foods were used.

Gaughran, George R. L. A COMPARATIVE STUDY OF THE OSTEOLOGY AND MYOLOGY OF THE CRANIAL AND CERVICAL REGIONS OF THE SHREW, BLARINA BREVICAUDA, AND THE MOLE, SCALOPUS AQUATICUS. University of Michigan, Museum of Zoology, Miscellaneous Publications no. 80. 1-82 p. + 23 p. Feb. 1954. $1.00.
For thesis citation, without abstract, see WR 70:18.

Kowalski, K., and R. J. Wojtusiak. HOMING EXPERIMENTS ON BATS. PART I. Bull. Acad. Polonaise Sci. & Letters, Krakow, Classe Sci. Math. & Nat., Ser. B, Sci. Nat. (II), 1951. 33-56 p., plates 3-4. 1952. [From Journal of Mammalogy 35(1).]

Krutzsch, Philip H. (Mus. Nat. Hist., U. Kans.) A KEY TO THE BATS OF WESTERN NORTH AMERICA NORTH OF MEXICO. Chicago Academy of Sciences, Natural History Miscellanea no. 133. 1-6 p., illus. April 1954.
Technical key to species known west of 110th Meridian; certain characters are illustrated.

Orr, Robert T. (Calif. Acad. Sci., San Francisco.) NATURAL HISTORY OF THE PALLID BAT, ANTROZOUS PALLIDUS (LE CONTE). Proceedings of the California Academy of Sciences, 4th Series, 28(4): 165-246, illus. Jan. 1954.
Important monograph. Treats many topics on basis of field and laboratory studies.

Price, Myfanwy. (Med. School, Guy's Hospital, London.) THE REPRODUCTIVE CYCLE OF THE WATER SHREW, NEOMYS FODIENS BICOLOR SHAW. Proceedings of the Zoological Society of London 123(3): 599-621 + 4 pl. Nov. 1953.
Detailed technical study of a British species.

Pruitt, William O., Jr. AN ANALYSIS OF SOME PHYSICAL FACTORS AFFECTING THE LOCAL DISTRIBUTION OF THE SHORTTAIL SHREW (BLARINA BREVICAUDA) IN THE NORTHERN PART OF THE LOWER PENINSULA OF MICHIGAN. University of Michigan, Museum of Zoology, Miscellaneous Publications no. 79. 1-39 p., illus. July 1953. 60¢.
For abstract and thesis citation see WR 70:18.

MAMMALS--SHREWS, MOLES, BATS--Continued

Pruitt, William O., Jr. (Mus. Zool., U. Mich.) AGING IN THE MASKED SHREW, SOREX CINEREUS CINEREUS KERR. Journal of Mammalogy 35(1): 35-39, graphs. Feb. 1954.
Tooth-wear characters of age groups are described. These groups are correlated with weights of individuals and with shape and measurements of skulls. Skulls actually become smaller in older animals, enough so that taxonomic difficulty could arise.

Reagan, R. L., and A. L. Brueckner. (U. Md.) TRANSMISSION OF A STRAIN OF RABIES VIRUS TO THE LARGE BROWN BAT (EPTESICUS FUSCUS) AND TO THE CAVE BAT (MYOTIS LUCIFUGUS). Cornell Veterinarian 41(3): 295-298. July 1951.
Transmission successful in both; was carried through 5 serial passages in Eptesicus.

Reeder, William G., and Kenneth S. Norris. (Mus. Zool., U. Mich.) DISTRIBUTION, TYPE LOCALITY, AND HABITS OF THE FISH-EATING BAT, PIZONYX VIVESI. Journal of Mammalogy 35(1): 81-87, map. Feb. 1954.

Sanborn, Colin Campbell. (Chicago Nat. Hist. Mus.) BATS OF THE UNITED STATES. Public Health Reports 69(1): 17-28, illus. Jan. 1954.
Gives name, range, and habitat for each species, with 1 or 2 natural history notes for each. Apparently intended as a brief popular review of our bat fauna.

Scatterday, James E. (Fla. St. Bd. Health, Jacksonville.) BAT RABIES IN FLORIDA. Journal of the American Veterinary Medical Association 124(923): 125. Feb. 1954.
A bat, Dasypterus floridanus, that attacked a boy was found to be rabid. Some apparently normal individuals of this species, taken at 2 localities, were also rabid, as was at least 1 Lasiurus seminola.

Stegeman, LeRoy C. (U. of N. Y., Syracuse.) VARIATION IN A COLONY OF LITTLE BROWN BATS. Journal of Mammalogy 35(1): 111-113, graph. Feb. 1954.
"The purpose of this study [of 532 specimens] is fourfold. 1. To show the variation in a single colony at a single time. 2. To show the sex ratios. 3. To determine the age composition. 4. To secure information on the date of birth, and subsequent growth and development."

Walker, Ernest P. (Nat. Zool. Park, Wash., D. C.) SHREWS IS SHREWS. Nature Magazine 47(3): 125-128, illus. March 1954.
The author has had remarkable success in rearing Cryptotis. This popular article gives records of reproduction in captivity, describes development of young, tells of effect of bites on earthworm and man, and gives formula for the author's highly successful shrew and bat food. Several excellent photographs of young and adults.

MAMMALS--RABBITS AND PIKAS

Anonymous. A LITTLE KNOWLEDGE--A DANGEROUS THING. Journal of the American Veterinary Medical Association 123(920): 456. Nov. 1953.
Commenting on myxomatosis in Europe, author states that progress of the epizootic is being reported "by the monthly circulaire of the Office International des Epizooties, Paris." [This fact is of interest because reports in America so far have been little more than news notes.]

Anonymous. RABBITS AGAIN. Maryland Conservationist 31(2): 31. March 1954.
Copy of newspaper report. The Md. "State Game Farm at Salisbury is about to undertake a big rabbit-raising project...only 25 or so will be needed to get production rolling in hopes that come spring rabbits will be so plentiful that 'anyone sending in a request for a free shipment may have all...they want.'" [For papers reporting failure of previous cottontail-rearing schemes, see WR 68:12 and WR 70:19.]

MAMMALS--RABBITS AND PIKAS--Continued

Anonymous. [MYXOMATOSIS IN EUROPE.] Sports Afield 131(3): 142. March 1954.

"In addition to cursing Dr. Armand Delille, of Paris, who inoculated some pest rabbits on his estate with a disease that has already killed millions (and millions of dollars' worth) of rabbits, Frenchmen have taken to suing him. Now the disease has spread beyond France to bordering Belgium, Holland and Germany, has crossed the English Channel. The fur, felt, meat, hat and arms industries, the gamekeepers' union, and the sporting press are bringing suit against Dr. Delille. But the best they could gain would be a moral victory because the estimates of damage that the disease has done run as high as $150 million." Copied almost completely. [American rabbits seem to be resistant to myxomatosis.]

Church, B. M., F. H. Jacob, and H. V. Thompson. (Rothamsted Exp. Sta., Harpenden, Herts.) SURVEYS OF RABBIT DAMAGE TO WHEAT IN ENGLAND AND WALES, 1950-52. Plant Pathology 2(4): 107-112 + 1 pl. Dec. 1953.

Statistical study of yields of fenced and unfenced plots indicate that about 6½% of the winter wheat crop of England and Wales was lost because of rabbit damage. Most loss was concentrated on about 1/3 of the acreage.

Dahl, Herbert. (W. Va. Cons. Comm.) ROADSIDE RABBIT COUNTS AS AN INDEX TO RABBIT POPULATIONS. West Virginia Conservation 17(11): 10-11, illus. Jan. 1954.

Work in W. Va. has shown that changes in rabbit populations can be measured by roadside counts. These counts are made during the last 2 weeks of Aug. and during the last hour of daylight. They can, of course, show only trends, but they are considered reliable for this purpose.

Davis, David E. (Johns Hopkins School Public Health.) STUDIES ON RABBITS AND SPOTTED FEVER. Trans. 18th N. Amer. Wildl. Conf. 188-190 p. 1953.

A high rate of infection with spotted fever virus was found in a population of apparently healthy cottontails on a Md. island.--L. F. Stickel.

Grange, Wallace Byron. THOSE OF THE FOREST. Flambeau Publishing Co., Babcock, Wis. 314 p. 1953. $4.75. [From review by J. J. Hickey, Wisconsin Conservation Bulletin 19(3).]

"The book itself revolves around two hares, Snowshoe and his son, Lepus. The story follows their lives season by season, month by month, often night by night. Into the chronicle are woven intimate glimpses of other animals..." No human figure enters the story. "As an adventure in perception, Those of the Forest far transcends the classic works of Thoreau, Burroughs and Seton, to mention but a few. Its distinction lies, I think, in its portraits of the interrelationships of living things." "As a work intended for a mature audience, Those of the Forest is thus something of a landmark." "It is a book to be read leisurely by those who are deeply interested in nature. Set somewhat in the framework of fiction, it is an honest attempt to paint the wildlife of our northern coniferous forest as a veteran naturalist envisions it." "The effect is built up with an abundance of detail and a calm preoccupation with it..."

Lemke, Charles W. (Wis. Cons. Dept.) ABSTRACTS OF COTTONTAIL RABBIT MANAGEMENT PAPERS. Wisconsin Conservation Department. 1-14 p., mimeo. 1953. [No longer available from publisher.]

Long, informative abstracts of 25 important papers on rabbit management. Papers range in date from 1934-1952. This leaflet, now unfortunately out of print, should be a useful summary for research men, and should be of real value for handing out to sportsmen's groups who want solid information on what can be done to increase rabbit populations.

MAMMALS--RABBITS AND PIKAS--Continued

Mann, Wm. F., Jr., and H. J. Derr. COUNT YOUR COTTONTAILS. U. S. Forest Service, Southern Forest Experiment Station (New Orleans, La.), Southern Forestry Notes no. 89. 2nd of 4 unnumbered p. Jan. 1954
Rabbits do much damage by biting off tops of pine seedlings. Losses are usually greatest the winter of planting. "This year increased rabbit populations have been noted on three widely separated experimental areas in central Louisiana. On one 275-acre tract about 110 rabbits have been removed already, but damage to seedlings continues unchecked... Here is a good recipe for a rabbit repellent: Mix 3 pounds of asphalt emulsion with 2 quarts of water. Add 2 pounds of copper carbonate and mix again. Dilute with 8 more quarts of water. The repellent can be used either as a spray or a dip, but it must be kept off the roots of the seedlings." [Copied almost complete.]

Mansueti, Romeo. (Chesapeake Biol. Lab., Solomons, Md.) THE VARYING HARE, OR SNOWSHOE RABBIT, IN MARYLAND. Maryland Naturalist 23(1 & 2): 71-75, illus. 1953.
There are a few old records for western Md., and several hundred hares have been released there in recent years, apparently without results. The species is considered extirpated in the state. Restocking is believed to be folly, for the habitat is no longer suitable.

Peterson, Randolph L., and J. K. Reynolds. (Roy. Ont. Mus. Zool.) TAXONOMIC STATUS OF THE EUROPEAN HARE IN ONTARIO. Contributions of the Royal Ontario Museum of Zoology & Palaeontology no. 38. 1-7 p., graph. Jan. 1954. 50¢.
Statistical comparisons are made between L. e. europaeus and L. e. hybridus. It is determined that the race in Ontario, and apparently in the rest of North America where the species occurs, is L. e. hybridus of eastern Europe.

Thompson, Harry V. (Ministry of Agr., Tolworth, Surrey, Eng.) MYXOMATOSIS OF RABBITS. Agriculture: The Journal of the Ministry of Agriculture 60: 503-508, illus. 1954.
Good, brief review of epizootics in Australia, France, and England, and of some experimental work done earlier. It is believed that in 1952-53 the Australian epizootic saved crops worth 50 million pounds sterling. Great savings are also expected in England, where the disease was not officially introduced. "Some equilibrium between virus and rabbit is sure to be established eventually, but the end result may well be a smaller rabbit population." Domestic rabbits are being vaccinated with American fibroma virus to give temporary immunity.

Thompson, Harry V., and C. J. Armour. (Infestation Control Div., Ministry of Agr. & Fisheries, Eng.) POWER GASSING OF RABBITS. Agriculture: The Journal of the Ministry of Agriculture 60: 383-386, illus. 1953.
"The use of small petrol-driven machines for introducing cyanide gassing powders into rabbit warrens promises to accelerate rabbit destruction. Early tests with compressed air units have led to the development of a lighter and more efficient fan impeller."

Watson, J. S., and C. H. Tyndale-Biscoe. THE APOPHYSEAL LINE AS AN AGE INDICATOR FOR THE WILD RABBIT, ORYCTOLAGUS CUNICULUS (L.). New Zealand Jour. Sci. & Tech., sec. B, 34(6): 427-435. May 1953. [From Journal of Mammalogy 35(1).]

MAMMALS--RODENTS--MISCELLANEOUS

Drake, Harold, and Ernest S. Booth. REVISION OF THE RANGES OF THE POCKET GOPHERS OF SOUTHEASTERN WASHINGTON AND NORTHEASTERN OREGON AND THE DESCRIPTION OF A NEW SUBSPECIES THOMOMYS TALPOIDES WHITMANI. Walla Walla College Publ., Dept. Biol. Sci. & Biol. Sta., 1(3): 44-58, illus. Nov. 1952. [From Journal of Mammalogy 35(1).]

MAMMALS--RODENTS--MISCELLANEOUS--Continued

Godfrey, Gillian K. (Mrs. Crowcroft) (Bureau of Animal Population, U. of Oxford, Eng.) TRACING FIELD VOLES (MICROTUS AGRESTIS) WITH A GEIGER-MÜLLER COUNTER. Ecology 35(1): 5-10, illus. Jan. 1954

Describes counter, leg rings built to hold brass tube of cobalt 60, and applicator pliers. A few individuals in the same area can be marked recognizably by varying amount of cobalt 60, but in general only 1 individual was marked in an area. Marked animals could be detected at distances of 8-10' and located accurately at 2-4'. Locations and movements could be determined without trapping or other major disturbance. Individual ranges were worked out, and were found to average about 29 yards in length. In general, results of the study confirmed those obtained from trapping.

Goodpaster, Woodrow W., and Donald F. Hoffmeister. (6014 Kellogg Ave., Cincinnati, Ohio.) LIFE HISTORY OF THE GOLDEN MOUSE, PEROMYSCUS NUTTALLI, IN KENTUCKY. Journal of Mammalogy 35(1): 16-27, illus. Feb. 1954.

Habitat, nests, foods, feeding platforms, cheek pouch, behavior, reproduction and development, sanitation, methods of capture.

Horner, Elizabeth B. (Smith Coll.) ARBOREAL ADAPTATIONS OF PEROMYSCUS, WITH SPECIAL REFERENCE TO USE OF THE TAIL. University of Michigan, Contributions from the Laboratory of Vertebrate Biology no. 61. 1-84 p. + 7 pl. of numerous figs. Feb. 1954. $1.25 from U. Mich. Press.

Experiments and observations on 10 subspecies representing 5 species. Terrestrial and semiarboreal forms were represented. Results were analyzed statistically, are reported in detail, and are discussed at length. To sum up rather crudely, it was found that semiarboreal forms are better adapted to arboreal life both physically and mentally. I.e., they have more instinctive arboreal tendencies, and are better fitted to climbing by virtue of larger hind feet, longer tail, and other structural features. Many experiments demonstrated values of the adaptive characteristics. The results prove, among other things, that certain subspecific characters are adaptive.

Horsfall, Frank, Jr. MOUSE CONTROL IN VIRGINIA ORCHARDS. Agricultural Experiment Station, Blacksburg, Va., Bulletin 465. 1-26 p., illus. Nov. 1953.

This is not just another how-to-do-it booklet, for results of much first-hand study of mouse habits and control appear throughout the paper. Among major topics discussed are: how to recognize pine and meadow mice and their work; some reasons for control failures; movements of mice; baits (chufa tubers best for pine mice, steamed crushed oats for Microtus); poisons (zinc phosphide or strychnine); bait preparation and distribution (careful bait placement is stressed); pros and cons of mowing, fertilization, cultivation, use of hogs, fumigation, and ground sprays. Toxaphene as a ground spray has not lived up to early reports. But in Virginia promising results have been obtained with 2 lbs. of endrin or 4 to 4.5 lbs. of dieldrin per acre. Both chemicals have totally eliminated pine mice from ground-sprayed plots. Parathion can be lethal but acts too much as a repellent. Data on ground sprays are given tentatively; recommendations are for careful, intelligent use of old trail-baiting methods.

Ingles, Lloyd G. (Fresno St. Coll.) THE LITTLE PLOWMAN. Natural History 63(3): 134-139, illus. March 1954.

Biology and ecology of the mountain pocket gopher popularly narrated. The author believes that this gopher does much good in soil and water conservation and in helping maintain an environment suitable for many sorts of animals. The average amount of soil brought to the surface by a gopher in the summer is about 100 lbs. per week. "When there are ten animals on each acre, as in early autumn, this means about two tons of fresh mineral earth brought to the surface to be mixed with dead vegetation and transformed into humus."

MAMMALS--RODENTS--MISCELLANEOUS--Continued

Krutzsch, Philip H. NORTH AMERICAN JUMPING MICE (GENUS ZAPUS). University of Kansas Publications, Museum of Natural History 7(4): 349-472, illus. April 1954.

Generic revision, with discussions of phylogeny and generic relationships. Three species and numerous subspecies are recognized. Maps show ranges of each form. A valuable feature of the paper is good reviews of life history and ecology of each species. Authorities are cited for statements in these reviews, so the paper serves as an excellent source of references on biology of the genus.

Laycock, William H. AN ECOLOGICAL STUDY OF THE POCKET GOPHER (THOMOMYS TALPOIDES TENELLUS GOLDMAN) IN THE JACKSON HOLE REGION OF WYOMING. Wyoming Range Management (Laramie), Issue no. 64. 8 p., mimeo. 1953. [From Journal of Forestry 52(3).] 1½-page abstract of this Master's thesis, U. of Wyo., 1953, in Journal of Range Management 6(6): 461-462. Nov. 1953.

Ludeman, John. (US F&WS, Boston, Mass.) HERE'S ONE EXPERT'S OPINION ON PORCUPINE CONTROL. Pest Control 22(4): 26, 28, 30, 44, illus. April 1954.

Types of damage done by porcupines, and how to control by hunting, trapping, drift fences, electric fence, repellents, and poison.

Quay, Wilbur B. THE MEIBOMIAN GLANDS OF VOLES AND LEMMINGS (MICROTINAE). University of Michigan, Museum of Zoology, Miscellaneous Publications no. 82. 1-17 p. + 3 pl. March 1954. 15¢.

These glands of the eyelids are described comparatively and their considerable correlation with classification of the group is discussed.

Schwartz, Albert. A SYSTEMATIC STUDY OF THE WATER RAT (NEOFIBER ALLENI). University of Michigan, Occasional Papers of the Museum of Zoology no. 547. 1-27 + 3 pl. July 1953.

Five subspecies are recognized, 2 of them new. Factors affecting distribution and variation are discussed.

Stombaugh, Tom Atkins. A TAXONOMIC ANALYSIS OF THE PRAIRIE VOLES OF THE SUBGENUS PEDOMYS (GENUS PITYMYS). Ph.D. thesis, Indiana University. 118 p. 1953. [From long abstract in Dissertation Abstracts 13(6).]

Study of subspecies of "Pitymys" ochrogaster, with emphasis on statistical analysis of variation.

Thompson, Daniel Q. SUMMER FOOD PREFERENCE OF THE BROWN AND COLLARED LEMMINGS. In Science in Alaska, Proceedings 2nd Alaskan Science Conference, Alaska Div. AAAS. p. 347. [1953.]

Short account of palatability tests.

MAMMALS--RATTUS AND MUS

Becker, Kurt. (Robert-Koch-Institut, Berlin-Dahlem, Germany.) PREGNANCY RATES IN TWO DIFFERENT SAMPLES OF BROWN RATS. Journal of Mammalogy 35(1): 119-121. Feb. 1954.

Differently collected samples of the same population may give quite different ideas of reproductive rate and condition. "...only 149 or 13 per cent of the 'trapped' group were visibly pregnant, whilst in the 'hunted' group the pregnant rats amounted to 111 or 31.4 per cent. This difference is an obvious indication of the fact that a larger percentage of pregnant females is obtained if rats are driven out of their hiding places than when they are caught in traps." Also, "It may...justly be inferred that female rats in the first half of the pregnancy period are more responsive to traps than those in the second half of the pregnancy period, i.e. at a time when the animals are comparatively heavy and clumsy... Furthermore, the radius of activity of pregnant rats is known to be diminished."

MAMMALS--RATTUS AND MUS--Continued

Davis, David E. (Johns Hopkins School of Public Health, Baltimore.) THE CHARACTERISTICS OF RAT POPULATIONS. Quarterly Review of Biology 28(4): 373-401, illus. Dec. 1953.
Useful review paper that integrates information from many sources. Factors affecting population dynamics are analyzed in detail. Some factors considered are reproduction, mortality, movements, environment, predation, and competition. 47 references.--L. F. Stickel.

Habermann, R. T., F. P. Williams, and W. T. S. Thorp. (Nat. Inst. Health, Bethesda, Md.) COMMON INFECTIONS AND DISEASE CONDITIONS OBSERVED IN WILD NORWAY RATS KEPT UNDER SIMULATED NATURAL CONDITIONS. American Journal of Veterinary Research 15(54): 152-156, illus. Jan. 1954.

U. S. Public Health Service. 1954 REPORT FROM THE COMMUNICABLE DISEASE CENTER ON THE USE OF PESTICIDES. Pest Control 22(3): 9-10, 12, 14, 16, 18, 20, illus. March 1954.
Includes discussion of control of Rattus and Mus. Warfarin and pival are recommended and instructions are given for their use. ANTU is still recommended for fast reduction of large Norway rat populations. Its safety record is good.

MAMMALS--SCIURIDS

Anonymous. THE GREY SQUIRREL A WOODLAND PEST. Great Britain Forestry Comm. (London), Leaflet no. 31. 16 p., illus. 1953. 9d. [From Journal of Forestry 52(4).]

Durrant, Stephen D., and Richard M. Hansen. (U. Utah.) TAXONOMY OF THE CHICKAREES (TAMIASCIURUS) OF UTAH. Journal of Mammalogy 35(1): 87-95, map and graph. Feb. 1954.

Peterson, Randolph L. (Roy. Ont. Mus. Zool.) NOTES ON THE EASTERN DISTRIBUTION OF EUTAMIAS MINIMUS. Contributions of the Royal Ontario Museum of Zoology & Palaeontology no. 37. 1-4 p., map. Dec. 1953. 25¢.

Redmond, Howard R. (Miss. Game Comm.) ANALYSIS OF GRAY SQUIRREL BREEDING STUDIES AND THEIR RELATION TO HUNTING SEASON, GUNNING PRESSURE, AND HABITAT CONDITIONS. Trans. 18th N. Amer. Wildl. Conf. 378-389 p., graphs. 1953.
Includes important data on breeding and hunting. "Immigration was found to be a result of food shortage and the annual shuffle." Pine stands have no value for gray squirrels. Recommendations include maintenance of an average of 2 den trees per acre in bottomland hardwood forest. See also WR 67:15.--L. F. Stickel.

Squillace, A. E. EFFECT OF SQUIRRELS ON THE SUPPLY OF PONDEROSA PINE SEED. U. S. Forest Service, Northern Rocky Mountain Forest and Range Experiment Station, Research Note no. 131. 1-4 p. Dec. 1953.
Author's summary: "A preliminary study of squirrel damage to ponderosa pine seed crops on the Kootenai National Forest in western Montana shows that squirrels cut from 60 to 89 percent of the cones in poor and fair seed years. Such damage is considered sufficient to warrant control in order to improve chances for natural regeneration. Nailing a 20-inch band of aluminum around the trunk of isolated trees at about 5 to 7 feet above the ground proved effective in keeping out squirrels. This method, incompletely examined in this study, needs further investigation before it can be considered a practical control method. Control of damage on individual trees could be used as a means of favoring seed production by superior individuals, and so lead to improved future stands." [Underlining ours.]

MAMMALS--SCIURIDS--Continued

White, John A. (U. Kans. Mus. Nat. Hist.) GENERA AND SUBGENERA OF CHIPMUNKS. University of Kansas Publications, Museum of Natural History, 5(32): 543-561, illus. Dec. 1953.
After studying numerous characters, the author concluded that Tamias and Eutamias are not only distinct genera, but are derived from different tribes. Old World (Eutamias) and New World (Neotamias) subgenera are recognized in the genus Eutamias.

White, John A. (U. Kans. Mus. Nat. Hist.) GEOGRAPHIC DISTRIBUTION AND TAXONOMY OF THE CHIPMUNKS OF WYOMING. University of Kansas Publications, Museum of Natural History, 5(34): 583-610, illus. Dec. 1953.
Key to and descriptions of the 4 species, and diagnoses, descriptions, comparisons, maps, and locality lists for the subspecies.

White, John A. (U. Kans. Mus. Nat. Hist.) TAXONOMY OF THE CHIPMUNKS, EUTAMIAS QUADRIVITTATUS AND EUTAMIAS UMBRINUS. University of Kansas Publications, Museum of Natural History, 5(33): 563-582, illus. Dec. 1953.
The species are separated, their subspecies are reviewed, and 3 new subspecies of umbrinus are described.

White, John A. (U. Kans. Mus. Nat. Hist.) THE BACULUM IN THE CHIPMUNKS OF WESTERN NORTH AMERICA. University of Kansas Publications, Museum of Natural History, 5(35): 611-631, illus. Dec. 1953.
Key to and descriptions and figures of bacula of the various species, with remarks on relationships.

MAMMALS--BEAVER

Bailey, R. Wayne. (W. Va. Cons. Comm.) STATUS OF BEAVER IN WEST VIRGINIA. Journal of Wildlife Management 18(2): 184-190, map. April 1954.
Based on 1952 census. 557 colonies and about 3,119 individuals were reported. This represents an increase of 45% since 1947. Range has expanded greatly in this time, with all potential range being occupied. Rate of reproduction is about 40% annually. Trapping and poaching account for almost all losses. Population has been nearly stable for 3 years, and can be kept stable with annual take of 750-800. Trapping statistics and economics are discussed. Beaver, mink, and muskrat taken during beaver season gave average total fur return of $20.00 per acre occupied by beaver. Value of beaver pelts averaged $11.90 in 1952. About 28% of W. Va. beaver are on Monongahela National Forest, where they occupy about 0.03% of the area. The 275 beaver taken on this forest in 1952 represented about 32% of the population, while harvest for state was about 25%. Trapping on public lands should be regulated to take 25-30% of beaver each year. System of doing this is explained.

Cook, Arthur H., and Edward R. Maunton. (N. Y. Cons. Dept.) A STUDY OF CRITERIA FOR ESTIMATING THE AGE OF BEAVERS. New York Fish and Game Journal 1(1): 27-46, illus. Jan. 1954.
Four female beavers were studied by X-ray from birth to about 3 years. Age up to 12 months could be determined from dental characters. Age from 1 to 2 years could be estimated from mounds of the maxillary bone over bases of cheek teeth plus height of sagittal crest. Tail width, weight, pelt size, and ossification of long bones were of little value in defining age. Numerous skulls taken by N. Y. trappers in 1948 were studied. "These skulls were aged according to the procedures outlined above, following which a series of skull measurements was taken. Except for defining ages of beavers 1 year old or less, these measurements were too variable to be of value for estimating beavers' ages." The paper is detailed and well illustrated with drawings and graphs. It should be of considerable value not only in explaining age characteristics that are recommended, but in debunking some that are commonly used.

MAMMALS--BEAVER--Continued

Engle, James W., Jr. (Va. Comm. Game.) PRESENT STATUS OF THE BEAVER IN VIRGINIA. Virginia Wildlife 15(4): 16-17, illus. April 1954.
Va. has a total of 284 colonies. Allowing 6 per colony, there are about 1,704 beavers in state. Limited trapping by permit is being done in 5 counties. It is expected that permit trapping will have to be continued. Number of colonies per county is shown in table.

Fuller, William A. (Canadian Wildl. Service, Fort Smith, N. W. T.) AERIAL SURVEYS FOR BEAVER IN THE MACKENZIE DISTRICT, NORTHWEST TERRITORIES. Trans. 18th N. Amer. Wildl. Conf. 329-335 p. 1953.
A technique of aerial surveying is described. Greatest reliance is placed on locating winter feed beds. Colonies per mile is used as an index of abundance.--L. F. Stickel.

Hakala, John B. PRODUCTIVITY AND GROWTH RATES OF BEAVER IN INTERIOR ALASKA. In Science in Alaska 1951, Proceedings 2nd Alaskan Science Conference, Alaska Div. AAAS. 327-330 p. [1953.]
A brief progress report. "In conclusion, the data obtained to date show a decided decrease in productivity and growth rate in Alaska as compared to that found by researchers in the United States. Colonies studied show an increase of two or three beaver per year. Weights of one-year-old beaver are from 11 to 17 pounds; two-year-old beaver, 24 to 30 pounds; and three-year-old beaver, 30-36 pounds. Colonies have varied from one to eight beaver."

Hollister, J. Murray. A BEAVER HOUSE. Nature Magazine 47(4): 211, 220, illus. April 1954.
Detailed description and scale drawing of one house in Vermont.

Holweg, Arthur W. (N. Y. Cons. Dept.) AERIAL BEAVER SURVEY. New York State Conservationist 8(5): 13. April-May 1954.
A 50% survey of northern N. Y. yielded an estimate of 2,558 colonies. Cost of survey, $3,409, can be cut by flying only 1/3 as many lines. Survey from ground would be far more costly.

Patric, Earl F., and William L. Webb. (St. U. of N. Y., Syracuse.) A PRELIMINARY REPORT ON INTENSIVE BEAVER MANAGEMENT. Trans. 18th N. Amer. Wildl. Conf. 533-537 p. 1953. (Reprinted in Journal of Forestry 52(1): 31-32. Jan. 1954.)
Report of experiments at Huntington Wildlife Forest in Adirondacks. Suitable stages of forest succession are maintained at colony sites. Different methods are required in bracken, marsh, hardwood, and conifer sites. Surplus animals must be closely harvested to keep food supply in balance and to prevent travel to places where beavers are not wanted.

Rawley, Ed. (Utah Game Dept.) ADDITIONAL EVIDENCE PROVIDED ON BEAVER LONGEVITY. Utah Fish and Game Bulletin 10(7): 2, 5, 6, illus. Jan.-Feb. 1954.
Records of female of 15 years and male of 14. Both had retained their ear tags for 12 years. Utah.

Sanderson, Glen C. (Iowa Cons. Comm.) RECENT STATUS OF THE BEAVER IN IOWA. Iowa Academy of Science 60: 746-753, map. 1953.
Tells of history in state and reports recent studies. Beavers now occur practically all over state, and are commonest near large rivers. Season was opened in 1949. Harvest has varied little, from about 2,500 to 3,800 pelts, despite many variables, including seasons of from 7 to 30 days. Low pelt prices make it hard to get adequate harvest. Sex ratio for sample of 172 was 110 males per 100 females. Weights ranged from 10 to 70 lbs. with average of about 34 lbs. Twelve unborn litters averaged 4.08 young. Percentage of small pelts increased in 1952. Popularity of sheared raccoon may be responsible for decline of beaver pelt price.

MAMMALS--BEAVER--Continued

Webb, William. (N. Y. St. Coll. Forestry, Syracuse 10.) BUREAU OF MISSING BEAVER. New York State Conservationist 8(5): 12-13, illus. April-May 1954.
Popular article that gives a few original data on weights, growth, and movements, and asks what becomes of all the marked but unaccounted-for beaver.

MAMMALS--MUSKRAT AND NUTRIA

Lord, G. H., A. C. Todd, and C. Kabat. (U. Wis.) THE BLOOD PICTURE OF MUSKRATS UNDER PENTOBARBITAL SODIUM. American Journal of Veterinary Research 15(54): 79-81. Jan. 1954.
"A study of the blood picture of 71 apparently healthy Wisconsin muskrats..."

Low, Jessop B. (Utah Agr. Coll.) SPRING VERSUS FALL MUSKRAT SEASON. Utah Fish and Game Bulletin 10(8): 3, 6, 8. March 1954.
Utah has tried both spring and fall seasons but opinions are still divided. The author lists the merits and demerits of both and concludes that the 6-week spring season, Feb. 15 to March 30, is best. Tables show muskrat catches, by season and county, for recent years; time of primeness; and seasonal preference of trappers. Some advantages of spring season are: fewer females and small young taken, more pelts prime and prices better, less interference from water birds and hunters, fits better into trappers' schedules, weather conditions generally better.

Sather, J. Henry. (U. Nebr. Dept. Zool.) THE DENTITION METHOD OF AGING MUSKRATS. Chicago Academy of Sciences, Natural History Miscellanea no. 130. 1-3 p., illus. March 1954.
Following up a suggestion of Gould and Kreeger (J. Mamm. 29: 138-149), the author studied an age characteristic of molars of 58 skulls of known-age muskrats from Nebr. Using first upper molar as key tooth, it was found that in 46 subadults (ages 4-9 months) the fluting ran into the socket. In 12 adults (1½ years or older) the fluting ended before entering the socket. The difference is easily seen in the drawings. The author believes that this method could be used for animals in the flesh if the flesh from the side and anterior edge of the first molar were cut away.

Stevens, W. E. THE NORTHWESTERN MUSKRAT OF THE MACKENZIE DELTA, NORTHWEST TERRITORIES, 1947-48. Canadian Wildlife Service, Wildlife Management Bulletin, Series 1, no. 8. 1-40 p. + 7 p. of illus. Oct. 1953.
Much information on biology of muskrat in a region where climate itself is a limiting factor. Subjects include: description of 5 study areas, distribution of muskrat in northwestern Canada, trapping and tagging methods, size and weight (by sex and age groups), apparent sex ratios, sexual cycle and reproduction, populations in various areas, winter biology and carrying capacity, harvesting methods and problems, decimating factors, and status and habitat conditions of beaver in region. Tagging was done with ear tags, and with waterfowl bands closed about tail base; loss of markers was 2% and 7%. Wire cage traps were effective, but not at all seasons. As usual, more males than females were taken. Height of breeding is in mid-June. Yearling females have 1 litter per season, but some older females apparently have 2. Muskrats of the region live in bank dens, but in winter build feeding houses ("pushups") above holes in ice. If flooded out of dens, they freeze in pushups. Most trapping is done at pushups, with harvest completed by shooting near end of season. Trappers (5) averaged 1 muskrat per 3 trap-nights. After breakup of ice, trappers can shoot as many rats in a night as they can trap in a week. Small, cheap dams would improve some areas. There is some suitable beaver habitat in the region, and beavers can be increased now that registered trapping areas are in effect. Previously they were kept shot off for food.

MAMMALS--FURBEARERS--GENERAL

Clark, Wilson F. (Fernow Hall, Cornell U.) TRAPPING AND FUR MANAGEMENT. Cornell University, Cornell 4-H Club Bulletin, Bulletin 101. 1-43 p., illus. Oct. 1953.

An excellent guide for beginning trappers. It was prepared for use in 4-H projects but should be useful to many, whether young or adult. It contains tips that may be helpful even to veteran trappers. Fundamentals of trapping--equipment, sets, preparation of pelts,etc.--are clearly outlined and finely illustrated. Drawings show tracks as well as sets. Brief life histories with some ecology help give the beginner a broader picture than would trapping instructions alone. One section, "Managing the Fur Crop," suggests 10 things that an individual or small group might do to improve habitat for fur animals. Most of the projects would be at least equally helpful to small game.--L. M. Llewellyn.

Elkins, W. A. (Juneau, Alaska.) NEEDED RESEARCH ON ALASKAN FUR ANIMALS. In Science in Alaska 1951, Proceedings 2nd Alaskan Science Conference, Alaska Div. AAAS. 355-362 p. [1953.]

Fur business was the 3rd largest industry in Alaska before World War II, and trapping is still the only known use of much of Alaska. Chief fur bearers are muskrat, beaver, mink, and marten. The author feels that research should be concentrated on them because of their present importance. We need to know much of the local life history, and how habitat and land-use changes effect populations. Better fur handling should be taught. Temporary refuges for certain fur animals are used to build up populations. They have served well in some instances but better appraisal of their effects is needed. How much good would permanent refuges do in stocking surrounding areas? Ontario results suggest that a pattern of marten refuges would be valuable. Registered traplines have proven their worth in Canada but would be hard to apply in Alaska. Some comparable system is needed in Alaska, where few trappers have any equity in their trapping area. Studies and tests along these lines should be made. Examples are given of important practical results from research on fur animals; it is believed that equally good results can be obtained in Alaska. A table shows the Alaskan fur take, by species, 1945-50.

Remington, Jack D. (Colo. Game Dept.) FUR BEARERS OF COLORADO. Colorado Game and Fish Department, Educational Pamphlet no. 4. 1-18 p., illus. No date. [1953.]

Popular booklet with photos of 15 important species, notes on natural history and economic status of these species, and a plea for more research and management to be financed from proposed severance tax on pelts. Annual harvest in state averages about 125,000 pelts valued at nearly $500,000 in "normal" years.

Remington, Jack D. (Colo. Game Dept.) LET'S MANAGE OUR FUR BEARERS. Colorado Conservation 3(1): 24-26. Jan.-Feb. 1954.

Colorados' fur crop could be much increased. Money needed for research and management could be raised by a severance tax on fur. Registered traplines on public lands would be a great help in controlling the take of fur animals. The law should be changed to permit private trappers to take beaver, at least on registered traplines on public lands. Under present laws, the state cannot adequately handle beaver overpopulation problems.

Thomas, Earl M. (Wyo. Game Comm.) WYOMING FURBEARERS. Wyoming Game and Fish Commission. 100 p. 1954. 50¢. [From Wyoming Wild Life 18(3).]

"The bulletin is reprinted from a series of 23 articles which appeared in Wyoming Wild Life during 1952 and 1953." Most of these articles were listed separately in Wildlife Review as they appeared. They contain reviews of natural history information, but their greatest value is in providing data on status and management of furbearers in Wyoming.

MAMMALS--FURBEARERS--GENERAL--Continued

Woodfield, Frank. THE FUR TAKE IN MARYLAND. Maryland Conservationist 31(3): 9-12, illus. May 1954.
Total known take, by species, for 1950, 1951, and 1952, with discussion of trapping in state. "...under the relatively new law which requires reports of all pelts taken in Maryland, whether sold to dealers in this State or elsewhere, more accurate comparisons will be possible in the future."

MAMMALS--BEARS

Bailey, R. Wayne. (W. Va. Cons. Comm.) ARE WE LOSING THE BLACK BEAR IN WEST VIRGINIA. West Virginia Conservation 17(11): 4-9, 28-29, illus. Jan. 1954.
Although bears may be commoner in some localities, their range in the state is shrinking. Bears have disappeared from many counties in the last generation. Some bears, usually old males, kill sheep, so bears are hated and killed illegally. A few counties have bounties on all bears. Estimates indicate that losses of sheep to bears are not great. In one bear county, about 8 persons suffer an average of about $100 worth of damage to sheep per year. Some people may be put out of the sheep business, as claimed, but bears do not do enough damage to alter trends in sheep production. Graziers on public lands should have to take their chances, and be allowed to kill only guilty bears. Economic and esthetic values of bears outweigh the damages. Bear hunters spend about $1,500 per hunt, for total of around $100,000 per year in state. This sum is nearly half the value of all sheep in one bear county. Pros and cons of state paying for bear damages are discussed. County bounty money could be spent better in hunting down guilty bears and paying for damage. State law should be altered to: 1. Make bear a game animal. 2. Allow bears to be killed only with weapons legal for deer. 3. Require all bears to be tagged and recorded. 4. Require detailed report on bears killed because of stock damage, and on damage itself. 5. Prohibit killing of bears under 100 lbs. 6. Make it illegal to hunt bears with dogs. If these things are done, a long legal season can be allowed. If they are not done, bears and bear hunting face a bleak future.

Hock, Raymond J. RECTAL TEMPERATURES OF THE BLACK BEAR DURING ITS "HIBERNATION." In Science in Alaska 1951, Proceedings 2nd Alaskan Science Conference, Alaska Div. AAAS. 310-312 p. [1953.]

Levin, Oscar R. (Shelton, Wash.) THE SOUTH OLYMPIC TREE FARM. Journal of Forestry 52(4): 243-249, illus. April 1954.
Includes quite a bit of data, some quantitative, on bear damage to trees. "...during the past five years our tree farm lands have lost 100 trees to bear for one by fire." Restocking of the forest was being retarded. In 2 years a control program removed 300 bears from 8 townships where bear population was estimated as nearly 4 bears per square mile. This lessened damage by more than 50%. Few bears in the area are killed by hunters and it is thought that the population grew to the point of food shortage. In May, June, and July, 75% of bear stomachs contained cambium strippings; 5% contained fawn remains.

Matson, J. R. (Perry, N. Y.) OBSERVATIONS ON THE DORMANT PHASE OF A FEMALE BLACK BEAR. Journal of Mammalogy 35(1): 28-35, illus. Feb. 1954.
Frequent observation of a dormant female and her young in Pa. gave significant information on behavior, reproduction, and the biology of dormancy.

MAMMALS--RACCOON AND RINGTAIL

Dorney, Robert S. (Wis. Cons. Dept., Ladysmith.) ECOLOGY OF MARSH RACCOONS. Journal of Wildlife Management 18(2): 217-225, map. April 1954.
Relationship of raccoons to other game and fur animals was studied at Horicon Marsh, Wis., during 1949-50. Raccoon population was estimated roughly from dens, tracks, and certain assumptions. Tree dens were scarce and most

MAMMALS--RACCOON AND RINGTAIL--Continued

coons used ground dens. Shortage of tree dens was not a limiting factor; it is doubtful that nest boxes are needed by raccoons, at least where den-digging species are common. Analysis of scats and stomachs showed that crayfish and muskrat kits (under 30 days of age) were the major summer foods. Small numbers of young muskrats harvested in a section where coons were especially common indicated that high raccoon population may cause severe loss of muskrats. Crippled waterfowl, trapped muskrats, corn, and berries were important foods in season. Coons ruined pelts of 71 trapped muskrats in 1949-50 season but only 10 in next season. This reduction probably was caused by greater abundance of crippled waterfowl, and by cold and snow that reduced raccoon activity.

Kellner, William C. (Va. Game Comm.) THE RACCOON IN SOUTHWESTERN VIRGINIA. Virginia Wildlife 15(1): 16-17, 21, illus. Jan. 1954.
Brief, popular condensation of M.S. thesis. In attempt to determine reasons for scarcity in region, studies were made in 3 areas. A limited amount of food habits information is summarized. Ample denning sites were found: 1.05 den trees and 1.22 ground dens per acre. Two transplanted coons traveled 21 and 7.5 miles. Average of 5 litters was 4.4 young. Average of 12 Oct.-Jan. weights was 9.1 lbs. Average of 9 March weights was 6.9 lbs. A 27 lb. male was reported and a 16.3 lb. male was weighed. Light parasitism and no evidence of disease was found. Some increase of raccoons is being noted in the region. The state is introducing hundreds of coons per year from eastern counties. Of this the author says: "Raccoon restocking in some instances might re-seed an area, where the animal is rare, but if conditions are not favorable the coons will move out, or if they do stay they will generally not prosper or become abundant."

Kilham, L., and C. M. Herman. (Nat. Inst. Health, Bethesda, Md.) ISOLATION OF AN AGENT CAUSING BILIRUBINEMIA AND JAUNDICE IN RACCOONS. Proceedings of the Society for Experimental Biology and Medicine 85(2): 272-275. Feb. 1954.
An infectious agent, apparently a virus (here designated as RJV), has been isolated from liver of a sick, wild raccoon from eastern Md. Inoculation of other coons causes highly fatal disease characterized by conjunctivitis and elevated serum bilirubin often accompanied by jaundice. Grossly, eye involvement and jaundice are most frequent. Symptoms are similar to those reported from raccoons dying in many areas of eastern and midwestern U. S. Ferrets seem to be susceptible, but efforts to infect 12 other species, including dogs, were negative.--C. M. Herman.

Sherman, H. B. (U. Fla.) RACCOONS OF THE BAHAMA ISLANDS. Journal of Mammalogy 35(1): 126. Feb. 1954.
Another example of danger in casual introductions. Raccoons, reportedly only a pair, from Florida were released on Grand Bahama Island in 1932 or 1933, along with a pair of opossums. The opossums apparently failed, "but the raccoons have multiplied immensely and in consequence are a great nuisance to the peasant farmer as he is now unable to raise such crops as corn and peanuts. They are now scattered over the entire island even through the vast pine forest..."

Taylor, Walter P. (424 Harrison Ave., Claremont, Calif.) FOOD HABITS AND NOTES ON LIFE HISTORY OF THE RING-TAILED CAT IN TEXAS. Journal of Mammalogy 35(1): 55-63. Feb. 1954.
Detailed report on seasonal foods of 256 specimens, with brief notes on habitats, numbers, breeding, dens, fur value, and pet status. Ringtails are practically omnivorous. "Although there is some complaint regarding occasional ringtail depredations on poultry, and the animal does take an occasional bobwhite quail or mourning dove (one each in 256 specimens of ringtail collected), the seemingly beneficial food habits of the animal more than make up for any damage done."

MAMMALS--RACCOON AND RINGTAIL--Continued

Wallmo, O. C., and Steve Gallizioli. (Coop. Wildl. Unit, Texas A & M Coll.) STATUS OF THE COATI IN ARIZONA. Journal of Mammalogy 35(1): 48-54, map. Feb. 1954.

Coatis are now common in certain higher parts of southeastern Arizona. This article discusses locality records, numbers, habitats, habits, color phases, and foods. Coatis travel in bands except for some solitary old males. Bands seem to be nomadic. The animals search for food much as do raccoons, and damage poultry and orchards enough to cause complaints. For this reason, legal protection was removed in 1950. Nevertheless, coatis seem to be thriving.

MAMMALS--MUSTELIDS

Anonymous. FISHER AND OTTER TAKE, FALL AND WINTER 1953-54. New York State Conservationist 8(5): 32. April-May 1954.

Harvest in N. Y., listed by counties, totalled 172 fisher and 93 otter. Neither species is considered endangered.

Griffith, Richard E. (US F&WS.) WHAT IS THE FUTURE OF THE SEA OTTER? Trans. 18th N. Amer. Wildl. Conf. 472-478 p. 1953.

Past distribution and pelt harvests; population shifts; present distribution and numbers. The total population may now be around 5,000. Some populations are no longer increasing. Parts of the range remain unoccupied and nothing like past abundance is being approached. It may be time for careful harvest in some areas, and it is long past time for intensive study of this potentially fabulous resource. Several lines of study are outlined.

Jones, Robert D., Jr. (US F&WS, APO 944, Seattle, Wash.) A REPORT OF SEA OTTER INVESTIGATIONS CONDUCTED DURING 1951. In Science in Alaska 1951, Proceedings 2nd Alaskan Science Conference, Alaska Div. AAAS. 351-355 p. [1953.]

Otter were caught at Amchitka for transplanting during the winter of 1950-51. Animals on the beach were caught with hand nets. The project failed because few females were caught and an epizootic broke out in both free and captive otter. The paper also discusses some characteristics of otter: difference between sexes, tameness, behavior in captivity, color variation, grooming, senses, voice, and distribution in Alaskan waters.

Jordahl, Harold C., Jr. (Wis. Cons. Dept.) MARTEN ARE BACK! Wisconsin Conservation Bulletin 19(2): 26-28, illus. Feb. 1954.

Wisconsin has planted 5 Montana marten on a large island in Lake Superior.

Kainer, Robert A. (Okla. A & M Coll.) THE GROSS ANATOMY OF THE DIGESTIVE SYSTEM OF THE MINK. I. THE HEADGUT AND FOREGUT. II. THE MIDGUT AND THE HINDGUT. American Journal of Veterinary Research 15(54): 82-97, illus. Jan. 1954.

Includes information on teeth, glands, and other accessory structures.

Mansueti, Romeo. (Dept. Research & Ed., Solomons, Md.) THE MYSTERY MINK. Nature Magazine 47(4): 185-186, 218, illus. April 1954.

Popular review of what is known about the gigantic and apparently extinct sea mink, Mustela macrodon, of the northeast coast.

Poole, Earl L. THE OTTER--PENNSYLVANIA'S RAREST FURBEARER. Pennsylvania Game News 25(3): 4-9, illus. March 1954.

Status and foods in state, and partially compiled review of habits. "At one time uniformly distributed throughout the Commonwealth, excessive trapping and persecution have driven it to its last refuge in a comparatively limited area in the northeastern lake section of Pike, Monroe and Wayne Counties." Occasional stragglers are found elsewhere in state. Author's observations indicate that crayfish are commonest food, with catfish, chubs, fallfish and miscellaneous "minnows" outweighing all others. Frogs and mussels are also eaten. Trout, especially recently released ones, are sometimes taken. "...practically all of the qualified research workers who have taken the pains to ascertain the otters' food habits, have stated definitely that it appears to be neutral or definitely beneficial..."

MAMMALS--MUSTELIDS--Continued

Quick, Horace F. (U. Maine.) WOLVERINE, FISHER, AND MARTEN STUDIES IN A WILDERNESS REGION. Trans. 18th N. Amer. Wildl. Conf. 513-532 p. 1953.
Based on 2 years of study of commercially trapped areas around Ft. Nelson, B. C. Much information is given on populations, numbers trapped, size of individual ranges, sex ratios, economic status, and abundance in different major habitats. Sources of error in interpreting trapping data are considered. Present catches do not seem excessive.

Schiller, Everett L. (Arctic Health Research Center, Anchorage, Alaska.) STUDIES ON THE HELMINTH FAUNA OF ALASKA. XVII. NOTES ON THE INTERMEDIATE STAGES OF SOME HELMINTH PARASITES OF THE SEA OTTER. Biological Bulletin 106(1): 107-121, illus. Feb. 1954.
Good information on 2 pathogenic worms. It is also pointed out that fish probably are more important in otter diet than supposed from scat study, for most of skeleton is discarded. Crabs are also believed to be important foods. For reduction of the heavy parasitism, it is thought that the Amchitka otter herd should be thinned by redistribution or harvest.

Schultz, Vincent. (Va. Polytechnic Inst.) STATUS OF THE BEAVER AND OTTER IN TENNESSEE. Report of the Reelfoot Lake Biological Station 18: 73-81. Jan. 1954. [Same as J. Tenn. Acad. Sci. 29(1).]
Based on sampling interviews with residents and questionnaires sent to conservation officers in each county. All records are listed, with date. Beavers now occur in various areas and appear to be increasing. Otters are practically nonexistent in Tenn. except in Duck River in Bedford Co. and in tributaries of the Mississippi. Heaviest otter population is in Hatchie River.

Wilson, Kenneth A. (N. C. Wildl. Resources Comm.) THE ROLE OF MINK AND OTTER AS MUSKRAT PREDATORS IN NORTHEASTERN NORTH CAROLINA. Journal of Wildlife Management 18(2): 199-207. April 1954.
Food habits of mink and otter. Neither species ate a significant number of muskrats. For abstract see WR 73:41.

MAMMALS--DOGS, WOLVES, FOXES

Kendrick, Herbert. GUN DOG BOOKS. Pennsylvania Game News 25(5): 59-60. May 1954.
Lists 12 books on training dogs, most of them on training bird dogs, and describes several of these books.

Kennamer, Earl Franklin. (Ala. Polytechnic Inst.) FOX TRAPPING ON THE FARM. Alabama Polytechnic Institute, Circular 373 (revised). 1-8 p., illus. April 1954.
Well illustrated account of trapping procedures. "Taking foxes for fur or killing those that prey on poultry and other stock is a job for the individual."

Shindorf, E. C. (Toponas, Colo.) COYOTES PROTECTED. Audubon Magazine 55(5): 205, illus. Sept.-Oct. 1953.
Members of the Toponas Grassland Protective Association are barring all control of coyotes and most other predators on more than 200,000 acres of land. Rodents and other small mammals are said to be ruining the range now that most predators are scarce and becoming scarcer. The Association is especially opposed to use of 1080 because of its secondary, or chain poisoning, effects. Members hold that 1080 as well as thallium and cyanide guns should be outlawed in Colorado. It is stated that range rodents take up to 1/3 of the hay crop and cut carrying capacity of range by as much as ½. "Despite reseeding and use of sound soil conservation practices on our land, we find that they are going downhill rapidly from the standpoint of growing vegetation." [It would be worthwhile to know to what factors an expert in range management would attribute this range deterioration.]

MAMMALS--DOGS, WOLVES, FOXES--Continued

Vibe, Christian. FORTSATTE UNDERSØGELER OVER GRØNLANDS RAEVEBESTAND. Atuagagdliutit-Grønlandsposten 93(14): 230-233, illus., tables. 1953. [From Polar Record 7(47).]

"Foxes in Vestgrønland; results of investigations; numbers trapped; quality of pelts in relation to period and area."

MAMMALS--CATS

Eberhard, Thomas. (Hardy Ranger Sta., Moskee Rt., Lead, S. D.) FOOD HABITS OF PENNSYLVANIA HOUSE CATS. Journal of Wildlife Management 18(2): 284-286. April 1954.

Summary: "A total of 202 house cat stomachs and 32 cat fecal samples was collected from April, 1949 through July, 1952. Analyses of stomach contents and feces revealed that rodents, table foods and garbage, and possibly cottontail rabbits were the primary foods of field-hunting cats. Birds, shrews, insects, and other forms were secondary in volume and occurrence. Non-field cats took very few birds and cottontails; their diet consisted mainly of table foods and garbage." Some, at least, of the larger animals eaten represented highway kills or other carrion. "Extremely low occurrence of song-birds and cottontail in the non-field cat's diet gives substantial support to the contention that most well-fed pets will not prey on desirable wildlife forms." References are given to the other papers on cat food habits.

Elton, C. S. (Bur. Animal Population, Oxford U., Eng.) THE USE OF CATS IN FARM RAT CONTROL. British Journal of Animal Behavior 1(4): 151-154. Oct. 1953.

A number of studies and observations lead Elton to believe that cats cannot control a large rat population, but that if rats are initially exterminated a few cats can keep the immediate area of the farm buildings rat-free for long periods. Ricks more than about 50 yards from cat-occupied units continue to have rat infestations, often heavy ones. Cats kept for rat control are given part of their food; economics of this are discussed, with conclusion that cats are not especially cheap control agents, but that they supply a useful and efficient source of additional labor that keeps rats at very low densities.

McLean, D. D. (Calif. Dept. Game.) MOUNTAIN LIONS IN CALIFORNIA. California Fish and Game 40(2): 147-166, illus. April 1954.

"Included are life history observations and a 44-year record of the kill. From 1907 to 1950, the State of California has paid bounties on 10,558 lions, an average of 240 per year. The present population...is estimated at 600 adults. It is felt that this population is remaining steady or possibly gaining slightly." Among topics briefly discussed are: breeding period and kittens, production, mortality, parasites, range, general habits, gaits, odd behavior, habitual beats, signs and markings, stalking prey, following humans, domestication, hunting, and control. The author believes that puma populations tend to parallel deer populations, but with a 2-year lag. "Perhaps the two-year lag is due to the fact that most lions do not breed oftener than every other year, and it takes nearly two years before the kittens become entirely independent."

Moran, P. A. P. (P. O. Box 4, G.P.O., Canberra, A. C. T.) THE STATISTICAL ANALYSIS OF THE CANADIAN LYNX CYCLE. II. SYNCHRONIZATION AND METEOROLOGY. Australian Journal of Zoology 1(3): 291-298. 1953.

Author's summary: "It is shown that trapping figures for the lynx are definitely related to weather conditions. The significance of this for the various theories of origin and synchronization of the cycle is discussed."--Vincent Schultz.

MAMMALS--CATS--Continued

Schultz, Vincent. (Va. Polytechnic Inst.) STATUS OF THE BOBCAT IN TENNESSEE. Report of the Reelfoot Lake Biological Station 18: 66-72, maps. Jan. 1954. [Same as J. Tenn. Acad. Sci. 29(1).]

Based on sampling interviews with residents and questionnaires sent to conservation officers in each county. The bobcat was found to be present throughout much of Tenn. "In all cases the bobcat is more or less restricted to heavily wooded areas even in regions of scarcity..." It is relatively rare in heavily farmed sections.

Thornton, J. Fred. (Montgomery [Ala.] Advertiser.) MOUNTAIN LION COME-BACK IN ALABAMA. Alabama Conservation 25(5): 30-31. March-April 1954.

Several recent records are considered authentic. The author cites a broader article by Herbert Ravenel Sass, "The Panther Prowls the East Again," from the Saturday Evening Post. Sass apparently had records from S. C., Pa., N. Y., and New England. Sass and Thornton both believe the puma should be protected to some degree, not exterminated in the East.

MAMMALS--BIG GAME--GENERAL

Martin, Alexander C. (Patuxent Refuge, Laurel, Md.) QUALITY IN LARGE PACKAGES. Sports Afield 131(2): 23-29, illus. Feb. 1954.

Usual or average weights, and exceptionally high or record weights of American big game species, with drawings of each species by Bob Hines. Text discusses sources of variation in weights, especially effect of food supply.

Murie, Olaus J. (Moose, Wyo.) PLANNING FOR ALASKA'S BIG GAME. In Science in Alaska, Selected Papers of the Alaskan Science Conference, Nov. 1950. Arctic Institute of North America, Special Publication no. 1. 258-267 p. June 1952. [Citation only in WR 73:42.]

Alaskan game has declined in recent decades and has suffered from some unwise actions, but there is still time to do much for it through intelligent, integrated planning. Range condition is basic. It appears that some population fluctuations of sheep and movements of caribou may have been beneficial in permitting range recovery. Wolves also fluctuate naturally, but sometimes may require control. Reindeer and caribou cannot be managed together; an area must be devoted to one or the other. Zoning is necessary for these and other animals. But various compatible uses can be made of the same land. Elk should not be introduced to compete with moose, sheep, and caribou. Deer should not be introduced to compete with moose on primary moose range. Walruses are killed too freely for ivory; agreement with Eskimo leaders should be sought. Planning for wildlife should be fully integrated with planning for parks, wilderness areas, agriculture, and other uses of land; this requires interagency coordination and sound biological foresight rather than compartmentalized, independent operations.

Presnall, Clifford C. (US F&WS.) [Review of] WILDLIFE IN ALASKA. Journal of Forestry 52(2): 137-138. Feb. 1954.

This review of the book by A. S. Leopold and F. F. Darling (WR 75:41) is generally favorable but brings out some differences of opinion. Whereas Leopold and Darling considered caribou of the Arctic Slope abundant and in no need of special protection, Presnall states that aerial counts have shown a pronounced and abrupt decline in population during recent years that is amply sufficient to support justification of an emergency control of predators in the Umiat area. Leopold and Darling suggested "increased control and use of fire as a range improvement measure, in lieu of expenditures for caribou herd improvement through law enforcement and predator control." Presnall points out that need of fire control is universally recognized, "but the logistics and economics of fire prevention and control near the Arctic present obstacles that to date have baffled both Canadian and Alaskan foresters."

MAMMALS--BIG GAME--GENERAL--Continued

Stockstad, D. S., Melvin S. Morris, and Earl C. Lory. (Mont. Game Dept.) CHEMICAL CHARACTERISTICS OF NATURAL LICKS USED BY BIG GAME ANIMALS IN WESTERN MONTANA. Trans. 18th N. Amer. Wildl. Conf. 247-256 p., illus. 1953.
Mineral preference tests and chemical analyses of natural licks indicate that licks in western Montana are used by big game for their sodium content. Use of sodium chloride in management to attract game from overused lick areas is suggested.--L. F. Stickel.

MAMMALS--HOOFED (Except deer)

Anderson, Chester. (Wyo. Game Comm.) MIGRATION STUDIES OF JACKSON HOLE'S ELK HERD. Wyoming Wild Life 18(4): 26-34, illus. April 1954.
Substantial account of distribution and migration in different seasons of year, migration routes, and factors affecting migration. Recommendations are made for better distribution and management of the kill. Under present conditions some herds are shot too heavily, some too lightly. In particular, more Yellowstone elk should be taken after they leave the park.

Anonymous. [MOUNTAIN GOAT HARVESTS IN WASHINGTON.] Washington State, Game Bulletin 6(2): 4. April 1954.
Limited goat shooting by permits has produced a kill of 45 to 99 per year since 1948. Data are tabulated by year and county. Greater kills could be sustained. "To prevent reduction of goat herds which can be seen from accessible roads, and therefore enjoyed by numerous individuals other than hunters, the Game Department has closed considerable mountain goat area."

Baker, Theodore C. (Wyo. Game Comm.) PRONGHORN WINTER-KILL. Wyoming Wild Life 18(1): 22-23, illus. Jan. 1954.
Based on surveys in 1952 and 1953. In 1952, loss of 28 antelope was attributed 79.5% to cripple loss, 10% to starvation and exposure, 7% to summer fawn losses, and 3.5% to illegal kills. In 1953 a number of antelope perished because of deep snow and severe cold. There was little evidence of eagles, coyotes or other predators killing antelope, even where coyotes were living around antelope.

Chatelain, Edward F. (US F&WS, Anchorage, Alaska.) WINTER RANGE PROBLEMS OF MOOSE IN THE SUSITNA VALLEY. In Science in Alaska 1951, Proceedings 2nd Alaskan Science Conference, Alaska Div. AAAS. 343-347 p. [1953.]
Moose in the valley have increased greatly in past decade. Production is still high, with calves comprising 16.6% of herd as compared with 6.6% on Kenai. Winter food is limited. Willow is best, followed by birch, cottonwood, and aspen. Willow occurs in all wintering areas. Most areas have less than 1 moose per square mile, but good wintering areas have from 5.2 to 57.5 moose per mile. Moose require 25-40 lbs. of food per day. They eat twigs up to ½-inch diameter, break down and destroy small trees, and strip bark from others, often killing them. Willow can stand 50% utilization but is getting 65%. Natural succession is also reducing moose food. The range is now heavily overstocked. Hay stacks are being attacked and it is difficult to keep moose from them. Largest population is right along railroad. 104 moose were killed by trains on 53 miles of track in winter of 1950-51.

Halloran, Arthur F. (US F&WS.) THE DWARF ANTELOPE OF THE YUMA FLATS. Arizona Wildlife-Sportsman 25(4): 26-28, illus. April 1954.
Future of Antilocapra a. sonoriensis in Sonora is dim because of developments of civilization. This desert pronghorn is protected, however, on the Cabeza Prieta Game Range and Organ Pipe Cactus National Monument in Ariz. There the race has not been diluted by transplants from the north.

Jennings, William S., and John T. Harris. (Texas Game Comm.) THE COLLARED PECCARY IN TEXAS. Texas Game and Fish Commission, FA Report Series no. 12. 1-31 p., illus. Dec. 1953.
Reports on the peccary are so scarce that this life history and management study is doubly welcome. It is based on 18 months of work during winters of

MAMMALS--HOOFED (Except Deer)--Continued

3 years, mainly in 3 study areas in South Texas. Discussed are: nature of area, distribution and abundance, herd range, census methods, seasonal and regional foods, daily activities, range and livestock damage, breeding habits, weights and measurements, ectoparasites, and mortality factors. Favored habitat is dense brush. Peccary is not common where there are no extensive brush stands. Herd range has radius of not more than 3/4-mile in South Texas, but is considerably larger in Trans-Pecos Texas. Best census method is to determine range of a herd and then count tracks crossing dirt road. Main food is prickly pear (Opuntia) in South Texas, lechuguilla (Agave) in West Texas. Drinking water is not necessary. Peccaries occasionally attack sheep and lambs, and in West Texas there is some competition with sheep for sotol. Breeding occurs throughout year, with 1-4 (commonly 2) young per litter. Sex ratio is 1:1. Predation of coyotes and bobcats on young appears to be a limiting factor. Pressure of ordinary hunting is moderate. Peccary has game status and is increasing in 9 counties where well tolerated, but is decreasing where commonly killed with the aim of protecting lambs or cow dogs. Only 2 references are cited.

Kelsall, John P. (Box 117, Yellowknife, N. W. T., Canada.) CARIBOU CALVING STUDIES, 1951. Arctic Circular 6(1): 6-7. 1953. [From Polar Record 7(47).] "Investigations in Bathurst Inlet area by Canadian Wildlife Service."

Lemon, Carroll, JAVELINA--MYSTERY PIGS. Arizona Wildlife-Sportsman 25(2): 16-19, 45-49, illus. Feb. 1954.
This popular article on habits, habitats, and hunting also discusses weights and conservation. The author believes that the peccary is again on the down grade in Arizona. Suspected causes are too many hunters, illegal killing, and ranchers who shoot peccaries on sight. Another factor suspected is 1080 used in predator control.

Leopold, A. Starker, and F. Fraser Darling. (U. Calif. at Berkeley.) EFFECTS OF LAND USE ON MOOSE AND CARIBOU IN ALASKA. Trans. 18th N. Amer. Wildl. Conf. 553-560 p. 1953.
Development of Alaska can be expected to increase moose numbers insofar as it results in removal of spruce forest. Controlled use of fire is recommended to improve critical areas of winter moose range. An increased moose harvest is recommended for certain regions. Caribou must be expected to continue to diminish with human encroachment and disturbance. Management recommendations are protection of lichen range from overgrazing and fire. A full socio-ecological study of this species is needed.--L. F. Stickel.

Lukaszewicz, Karol. THE URE-OX. Ochrona Przyrody (Krakow) 20: 1-33, illus. 1952.
Thorough account, based on 121 references, of the Aurochs and its extinction in 1627. This wild cow is not to be confused with the wisent (European bison). Long English summary.

Osborne, Douglas. (U. Wash.) ARCHAEOLOGICAL OCCURRENCES OF PRONGHORN ANTELOPE, BISON, AND HORSE IN THE COLUMBIA PLATEAU. Scientific Monthly 77(5): 260-269, illus. Nov. 1953.

Patton, Fred. BIGHORN SHEEP HUNT. New Mexico Magazine 32(3): 26-27, 48, illus. March 1954.
Mexican bighorns in N. M. are almost restricted to the Big Hatchet Mountains on land owned by 3 ranchers. A survey indicated that about 160 bighorns were in the area, and that rams outnumbered ewes. Eleven rams were taken on permits by hunters and were studied by biologists. The rams seemed to be healthy and to have few parasites. Nevertheless, the herd does not seem to be increasing.

Pillmore, Richard E. (Colo. Game Dept.) REPORT ON THE BIGHORN. Colorado Conservation 3(1): 19-21, illus. Jan.-Feb. 1954.
After 68 years of protection, 169 permits were issued in 1953 for bighorn hunting in Colo. Fifty-nine sheep were bagged and lungs of 47 of them were

MAMMALS--HOOFED (Except deer)--Continued

examined for lung-worms--a source of serious losses in winter of 1952-53. These worms were found to be common in all but 1 hunted herd. Table shows kill of sheep and incidence of lung-worm by area. It may prove desirable to keep some herds below peak numbers (by hunting) to reduce disease incidence.

Pimlott, Douglas H. (Newfoundland Dept. Res., St. John's.) NEWFOUNDLAND MOOSE. Trans. 18th N. Amer. Wildl. Conf. 563-579 p., maps. 1953.
History of introduction and establishment, present range and food conditions, sex ratios, productivity and age ratios, open seasons and kill records, effect of fire and forest cutting. Range conditions are favorable and populations are high. Sex ratios are about 1:1. Yearling adult ratios are nearly 1:5. It is believed that more cows have calves than observation indicates. The author apparently does not feel that the bulls-only law is having any ill effect. [For critique of shooting only male moose see WR 69:26.]

Scott, Robert F. (US F&WS, Anchorage, Alaska.) DISTRIBUTION AND ABUNDANCE OF DALL SHEEP IN ALASKA. In Science in Alaska 1951, Proceedings 2nd Alaskan Science Conference, Alaska Div. AAAS. 340-343 p. [1953.]
These sheep occur locally in Alaska over an area of 500 by 700 miles. They are great travelers and probably occupy nearly all places that have the necessary combination of available winter food (not covered too deeply by snow), and rugged terrain (which helps protect from various enemies). Under favorable conditions, local populations probably radiate to include what is now marginal range. The sheep have been increasing in number for 3 years and their situation is encouraging. The author points out that the Kenai subspecies differs from the mainland form in horn characteristics.

Spencer, David L., and Edward F. Chatelain. (US F&WS, Anchorage, Alaska.) PROGRESS IN THE MANAGEMENT OF THE MOOSE OF SOUTH CENTRAL ALASKA. Trans. 18th N. Amer. Wildl. Conf. 539-552 p. 1953.
Major paper on moose ecology and management in Alaska. Among topics discussed are: moose populations and range conditions of several important areas; effect of moose, fire, and other factors on carrying capacity; records of winter kills; winter foods; desired stocking level as related to food conditions; herd composition; harvest and other mortality factors; management aims. With natural succession, moose foods grow out of reach or are crowded out. Overutilization by moose tends to prevent this and is thus desirable. Fire also sets back succession and helps moose, but cannot be used generally. More moose range is being lost through succession than is being gained. Management must aim at creation of more good range (where feasible) and at balancing populations with their food supplies. This is not easy, for there is a narrow margin between underuse and the desired degree of overuse.

Stebbings, E. L. MIGHTIEST MOOSE KILLER. Field and Stream 58(3): 40-41, 112-113, illus. July 1953.
Interesting, detailed account of moose kills by trains of Alaska Railroad and of the various methods (largely futile) tried to prevent these kills. Train-killed moose are salvaged and supplied to natives and charities for food.

Thrapp, Dan Lincoln. RETURN OF THE OUTCAST ELK. Pacific Discovery 6(6): 2-7, illus. Nov.-Dec. 1953.
History of tule elk and account of status of present herds. Herds have to be kept small, but some, at least, seem to be quite safe. Several good photos.

Udy, Jay R. (Utah Dept. Game.) EFFECTS OF PREDATOR CONTROL ON ANTELOPE POPULATIONS. Utah State Department of Fish & Game, Publication no. 5 of Federal Aid Division. 1-48 p., illus. [1954.]
Antelope were abundant in the early days of Utah but were reduced to about 670 by 1922. Little increase occurred in the 26 years between then and the time this study was begun in 1948. The trouble was not inadequate reproduction,

MAMMALS--HOOFED (Except deer)--Continued

for study of fawn crops reported here revealed production of 1.7 fawns per mature doe in one group. Numbers of fawns declined markedly, however, from summer to winter. Four study areas were set up. Two of them were given intensive predator control, 1 periodic control, 1 no organized control. Fawn survival was best where there was the most predator control and poorest where there was the least. Fawn survival more than doubled in one area after intensive control. Figures on survival are given in detail. Coyote control in Utah has been effective since 1948 (figures for 1913-51 are given). Antelope have increased from 981 in 1948 to 1499 in 1951, although 2 severe winters reduced some herds by as much as 60%. Predator control seems to be important, "but if we continue to abuse our desert ranges by overgrazing, it is doubtful if antelope herds can be maintained on a sustained yield basis. The antelope cannot compete with livestock [sheep] being fed on hay and supplements." Another interesting point brought out by the author is that a high jackrabbit population can serve as a real buffer for antelope.

Vos, A. de, and G. C. Armstrong. (Ont. Agr. Coll., Guelph, Ont.) AERIAL CENSUSING OF MOOSE AT BLACK BAY PENINSULA, ONTARIO. Ontario Department of Lands and Forests, Technical Bulletin, Fish & Wildlife Series no. 3. 1-12 p., map. 1954.

Census flights were made in winter or early spring each year from 1949 to 1953. Speeds were 85-110 mph. Altitudes were 400-1000 feet, averaging 700. Altitude of about 700 feet is considered best for trained observers, with 400 feet perhaps best for untrained ones. Lines were 2 miles apart and were over more or less wooded land. Numerous variables affecting counts are discussed. It is believed that, in the type of country studied, individual censuses are of little value for the determination of actual populations present. It is possible that repeated censuses provide useful information on winter distribution and population trends.

MAMMALS--DEER

Anonymous. NEW JERSEY DEER KILL--1953. New Jersey Outdoors 4(9): 32. March 1954.

Kill, listed by counties, totalled 5,111.

Berner, Lester M. (S. D. Dept. Game.) DEER MANAGEMENT IN THE BLACK HILLS OF SOUTH DAKOTA. PART II. South Dakota Conservation Digest 20(12): 8-12, 16, graphs. Dec. 1953.

The herd has grown so large that the 1952 kill was about 13,213. Increasingly liberal regulations--even those permitting 2 deer of any age or sex--have failed to control the herd; the author fears that no season can control it, and that mass starvation may ensue. Range improvement would be difficult with present deer populations, and even if it were successful the same problem would soon reappear, but with higher population level. It would not pay to make farm-type plantings for deer. The only economical measure other than herd control is thinning ponderosa pine to increase growth of browse. This point is discussed in detail, with the conclusion that Forest Service thinning policy is compatible with deer management except for certain sites. It may prove wise for the state to help pay for thinning on these sites for the sake of deer browse.

Clapper, Louis S. (Tenn. Game Comm.) HUNTERS ENJOY STATE'S GREATEST DEER SEASON. Tennessee Conservationist 20(2): 6-7, 16, illus. Feb. 1954.

The 6-day statewide open hunt, first of this type since 1907, gave total kill of at least 1,373. Most of the kill was in eastern counties. Tabular data are given on kill by area and county, average weights of bucks and does in different areas, and other hunting statistics. Average weights varied widely between areas in the state.

MAMMALS--DEER--Continued

Clover, Melvin R. (Calif. Dept. Game.) DEER MARKING DEVICES. California Fish and Game 40(2): 175-181, illus. April 1954.

Devices to shoot dye on deer that actuate the mechanism. "A one time and an automatic deer marker have been developed at low cost which have successfully marked deer. The dye retention period is sufficiently long, so that following marked animals along at least a major portion of the spring migration route may be accomplished. Present limitations involve the inability to recognize marked animals on their summer range, as the marking has been done in areas of winter concentration." The one-time marker has a powder charge that shoots dye when a deer trips a thread attached to a mouse trap that fires the charge. The automatic or repeating marker has a pressure tank from which dye is squirted each time (to about 100 times) a deer steps on the treadle.

Davenport, L. A., D. F. Switzenberg, Robert C. Van Etten, and Wayne D. Burnett. (Mich. Dept. Cons.) A STUDY OF DEERYARD CARRYING CAPACITY BY CONTROLLED BROWSING. Trans. 18th N. Amer. Wildl. Conf. 581-596 p., graphs. 1953.

Fenced 1-acre plots representing several types of northern Michigan deeryards were subjected to varying intensities of deer use during yarding seasons for several years. Results are reported in detail. It was found that previous estimates of sustained carrying capacity have been low. Good conifer yards will carry 2-3 deer per acre through yarding season in years of good browse production, but after being browsed out will seldom carry 1 per acre. Greatest sustained capacity comes when use is balanced with browse production. Unbrowsed yards deteriorate almost as rapidly as others because of natural developments. It is thought that certain hardwoods are important because they produce well under heavy browsing. It is also thought that conifers may yield more food then expected when they are bent down by snow to within reach of deer. Other sources of variation are discussed.

Dunkeson, Robert L., and Dean A. Murphy. (Mo. Cons. Comm.) MISSOURI'S DEER HERD / REPRODUCTION AND CHECKING STATION DATA. Presented at 15th Midwest Wildlife Conference, Chicago, Ill., Dec. 9-11, 1953. 1-5 p. + 2 graphs.

Statistical analysis of data for 1951 and 1952 shows that regional differences in soil fertility are correlated with weight, antler size and reproductive capacity. The differences are shown best by young deer. It was also found that 97% of corpora lutea may represent embryos; i. e., preimplantation mortality was only 3%.

Erickson, Arnold B., and Donald W. Burcalow. (Minn. Dept. Cons.) ST. CROIX PARK DEER HERD. Conservation Volunteer 17(97): 6-17, illus. Jan.-Feb. 1954.

Detailed, quantitative account of a herd that outgrew and damaged its range and was finally controlled by hunting, after which revegetation took place and sex and age ratios became more normal. Control in the park was effective, with total kill dropping from 1,292 in 1945 to 113 in 1952. In the first open season, 1945, kill was 60 per square mile. Twelve deer per mile is all that ordinary Minn. range can support on a sustained basis. In the first few seasons, does greatly outnumbered bucks in the bag--by as much as 215 to 100 in 1946. By 1952 the ratio had dropped to 109 does per 100 bucks. (From studies in various areas, the authors are convinced that there is a heavy excess of adult females in areas of overpopulation. What happens to males is a question.) Old deer predominated in the population. There were only 34 fawns per 100 does in 1945; in 1952 there were 88 per 100. Through the years, over half the kill (53.1%) was on the first day, 22.43% on the second. Data are also given (not comparatively) on weights, age classes, incidence of giant liver fluke, and (comparatively) on censuses, browse surveys, and sex ratios of fawns.

MAMMALS--DEER--Continued

Gamble, Bill, and Wendell Swank. (Ariz. Game Dept.) CASE OF THE STARVING DEER. Arizona Wildlife-Sportsman 25(3): 62-63. March 1954.
Experimental deer are dying in the midst of plenty of good deer food. This is explained as follows: "According to Dr. Serhig Kraschenninnikow of the University of Pennsylvania, who is considered an outstanding scientist in this field, animals living in a certain vicinity have in their mouths and stomachs those bacteria which will break down foods found in that area. If deer are released in an area where the majority of plants are different from those from where they were trapped, the introduced animals are unable to digest the new foods until they are 'infected' with the bacteria that break down these foods. There is only one way to become infected, by contact of mouth with native animals of the area. A lesser possibility of infection occurs by the introduced animal biting off food recently slobbered on by a native animal. ...a milksucking fawn is infected by contacting the mouth of its mother." [Can this principle be applied to caecal digestion in game birds? Could it explain certain bird-stocking failures?]

Gill, John. (W. Va. Cons. Comm.) YOUR DEER HERD / RESULTS OF THE 1953 SEASON. West Virginia Conservation 17(10): 9-23, illus. Dec. 1953. Reprinted as pamphlet, 1-15 p.
Detailed tabular data on kill by county, day of season, and sex. Text discusses various features of the season, including sex ratios and demonstrable improvement of herd as result of heavier harvesting. Kill in this third hunter's choice season was 19,844, making a total of 58,935 for the last three years as compared to a total of approximately 40,000 in the preceding 20 years. The herd is expected to hold up under present levels of harvesting. A longer season than 3 days is being considered. Better distribution of hunters is a major need.

Kearns, Chester M. (516 Munsey Bldg., Baltimore 2.) DEER KILL IN MARYLAND--1953. Maryland Conservationist 31(2): 17-18, illus. March 1954.
Kill and average weight, by counties. Total was 1657, increase of 82 over 1952. Some exceptionally high weights are mentioned.

Longhurst, William M., and James R. Douglas. (U. Calif. at Davis.) PARASITE INTERRELATIONSHIPS OF DOMESTIC SHEEP AND COLUMBIAN BLACK-TAILED DEER. Trans. 18th N. Amer. Wildl. Conf. 168-188 p. 1953.
At Hopland Field Station, north coastal California, 20 of 39 parasites were common to sheep and deer. Parasites caused heavy deer losses, less in sheep. The most promising parasite controls are improvement of range conditions and maintenance of proper stocking rates for both sheep and deer. Malnutrition intensified parasitism.--L. F. Stickel.

Madson, John. (Iowa Cons. Comm.) THE 1953 IOWA DEER SEASON. Iowa Conservationist 13(1): 1-5, illus. Jan. 1954.
Popular report on first Iowa deer season. Total kill was a little over 3,000, while deer population of state was estimated at 13,000. The kill is not thought to equal the year's reproduction. Multiple kills were legal, and 7% of the hunters killed more than 1 deer, which aroused protest, as did the $15 license fee. In a few areas, 50% of the deer may have been killed. There were no shooting accidents and there was little hunter-farmer friction. Rifled slugs were found extremely effective, with kills frequent at 100 yards. Deer were large, with many over 200 lbs. and at least 1 of 271 lbs. Ten-point bucks were not uncommon. Oldest deer checked was 7½ years old. Largest deer, both bucks and does, were in 3½ to 4½-year age classes.

Maguire, H. F., and C. W. Severinghaus. (N. Y. Cons. Dept.) WARINESS AS AN INFLUENCE ON AGE COMPOSITION OF WHITE-TAILED DEER KILLED BY HUNTERS. New York Fish and Game Journal 1(1): 98-109. Jan. 1954.
If wariness strongly influences what deer are shot, then bag checks cannot reflect true population composition. The authors studied this problem statistically by seeing if age composition varied during a hunting season. Data for several years and different regions of N. Y. were used. It was first demonstrated that checking station data do give a reliable picture of ages of deer bagged. Then ages of deer shot on different days of season

MAMMALS--DEER--Continued

were compared. It was found that more young males were shot on first day of season, but for season as a whole the effect is of no importance. For fawns, hunter preference seems to make more difference than wariness. For adult females, there is no evidence that wariness affects vulnerability to hunting. Regional variations and other complications are discussed. The general conclusion is that "considering the open season as a whole, wariness does not significantly distort the age composition of the legal kill of adult deer in relation to that of the corresponding wild population."

Schildman, George. (Nebr. Game Comm.) WHAT'S ON THE MENU FOR NEBRASKA DEER? Outdoor Nebraska 32(1): 13, illus. Winter [Jan.] 1954.
Brief discussion of main winter foods, with some percentages stated.

Westell, Casey E., Jr. (U. Mich.) AVAILABLE BROWSE FOLLOWING ASPEN LOGGING IN LOWER MICHIGAN. Journal of Wildlife Management 18(2): 266-271, graph. April 1954.
Aspen is being cut for pulpwood on large scale. After cutting, root suckers spring up at rate of 1,000 to 35,000 per acre. These suckers are much used by deer and remain within reach for 3-6 years, often affording 100-150 deer days of browse per acre for 3 years. Suckers are too thick to make a good stand, so 1/2-3/4 of the browse may be alloted to deer. Table shows weight of forage per acre produced by suckers of different sizes.

Westell, Casey E., Jr. (U. Mich.) EVALUATING AMOUNTS OF DEER BROWSE ON RECENTLY CUTOVER ASPEN STANDS. Presented at 15th Midwest Wildlife Conference, Chicago, Ill., Dec. 9-11, 1953. 1-3 p.
Pulp-size stands of aspen are being cut at the rate of 20,000 acres per year in Lower Michigan, making the greatest vegetational change in decades. Dense stands of root suckers are springing up and are used by deer throughout the year. An important new deer-food resource has been created. This paper gives quantitative results of clipping suckers of various heights at different dates and intensities.

Whitehead, G. Kenneth. DEER AND THEIR MANAGEMENT IN THE DEER PARKS OF GREAT BRITAIN AND IRELAND. Country Life, London. 370 p., illus. 1950. £4 4s. [From review by P. L. Errington, Quarterly Review of Biology 27(2).]
"In Whitehead's very British book, the management of deer is more like what Americans would call animal husbandry, with building up and maintenance of herds of native and exotic cervids in parks, transfers of stock from one place to another, artificial feeding, culling, and harvesting meat and trophies...Possibly the outstanding chapter is the one on the diseases and afflictions of deer, and, in this, the many pages devoted to rabies contain especially interesting information, a great deal of which is unlikely to be available elsewhere."

Wisconsin. FIRST OFFICIAL WISCONSIN CONSERVATION DEPARTMENT REPORT ON THE 1953 DEER HUNTING SEASON CHECK. Wisconsin Conservation Department. 1-42 p., map and graphs. Mimeo. Dec. 1953.
Discussion of season and its results, with much information on hunting statistics given in tables and graphs. The buck law was again in effect, hunting pressure was lower, and the take was estimated as around 18,000--lower than it should have been. The state's herd is increasing strongly. There is still overbrowsing in 39% of the northern areas and seasons of this type do little to help the situation.

Zwickel, Fred, Gardiner Jones, and Homer Brent. (Box 17, Elma, Wash.) MOVEMENT OF COLUMBIAN BLACK-TAILED DEER IN THE WILLAPA HILLS AREA, WASHINGTON. Murrelet 34(3): 41-46. Sept.-Dec. 1953.
Authors' summary: "Through intensive fawn tagging 639 fawns have been tagged in the Clemons Tree Farm area over a three-year period. Forty-four of these have been individually marked with colored plastic markers. Fifty-eight tag returns and 18 observations of plastic-marked deer show that 85 per

MAMMALS--DEER--Continued

cent (52 animals) of the fawn and yearling deer were seen or killed within one mile of the location of tagging while only three per cent (2 animals) were seen or killed over four miles from the location of tagging. Six returns from 2½-year-old does show that none were killed over 1.25 miles from the tagging site. Eight returns from 2½-year-old bucks show movements ranging from zero to 16 miles, with four of the eight bucks being killed over four miles from the site of tagging. It is believed that this differential movement by the bucks in this age class is primarily a result of the rutting period though population pressures or intraspecific strife may also be in operation. Movements of two semi-tame deer indicate that some movements may be a result of mere wandering or choice."

MAMMALS--MARINE

Anonymous. ELECTROCUTION OF WHALES. Fishing News no. 2040. p. 10-11, illus. 1952. [From Polar Record 7(47).]
"Recent experiments." See also Shipbuilding and Shipping Record 79(16): 497-498, illus. 1952.

Anonymous. NORTH ATLANTIC HARP SEAL FISHERY. Arctic Circular 5(6): 69. 1952. [From Polar Record 7(47).]
"Danger of over-exploitation; 1951 and 1952 take."

Bartholomew, George A., Jr. (U. Calif at Los Angeles.) BEHAVIORAL FACTORS AFFECTING SOCIAL STRUCTURE IN THE ALASKA FUR SEAL. Trans. 18th N. Amer. Wildl. Conf. 481-500 p. 1953.
Detailed observational studies of an isolated group of 20 harems were made in the summer of 1951. The patterns of behavior of particular importance in determining social structure are described and analyzed.--L. F. Stickel.

Brooks, James W. (U. Alaska.) THE PACIFIC WALRUS AND ITS IMPORTANCE TO THE ESKIMO ECONOMY. Trans. 18th N. Amer. Wildl. Conf. 503-510 p., map. 1953.
Seasonal distribution in Alaskan waters, sample weights, apparent sensitivity of senses, size of kill (900-1000 annually), uses, value of ivory products (over $150,000 annually), number killed only for ivory (85-90%), size of herds observed, apparent slight increase since 1920, probable times of breeding and birth, probability of reproduction in alternate years. Hunting seems to be limiting factor. Most walruses killed are not recovered. More efficient harvesting techniques are needed. Data on population trends and age composition are needed but are hard to get. They could be obtained if 1 tooth were saved from each animal bagged. Some legal trophy hunting might be allowed in order to stimulate interest in the species and to enrich Eskimo guides. It would be desirable to have calves spared. However, present population is large enough that dangerous reduction in near future is not feared.

Dawbin, W. H. WHALES AND WHALING IN THE SOUTHERN OCEAN. In Simpson, Frank, editor, The Antarctic Today: A Mid-Century Survey by the New Zealand Antarctic Society. A. H. & A. W. Reed, Wellington, N. Z. 151-194 p., illus. 1952. [From Polar Record 6(47).]
The same volume contains many other articles on biology and oceanography of the Southern Ocean. They are listed by author in the issue of Polar Record cited above.

Doan, K. H., and C. W. Douglas. (Central Fisheries Res. Sta., Winnipeg, Man.) BELUGA OF THE CHURCHILL REGION OF HUDSON BAY. Fisheries Research Board of Canada (Ottawa), Bulletin no. 98. 1-27 p., illus. 1953. 35¢.
Study of fishery for Delphinapterus leucas. Topics include: distribution and abundance; weights, measurements, color, etc.; life history and reproduction; food habits; parasites; hunting methods; reaction to hunting; marking; and utilization.

MAMMALS--MARINE--Continued

Essapian, Frank S. (Marineland, Fla.) THE BIRTH AND GROWTH OF A PORPOISE. Natural History Magazine 62(9): 392-399, illus. Nov. 1953.
Popular article that includes much descriptive material on behavior of Tursiops truncatus in captivity.

Jeffrey, Lela May. (Scripps Inst., La Jolla, Calif.) A REVIEW OF CERTAIN ASPECTS OF CETACEAN PHYSIOLOGY. Texas Journal of Science 3(4): 542-553, illus. Dec. 1951.
Semipopular review of several aspects of whale physiology. 42 references.

Miyazaki, Ichiro. RESULTS OF CAPTURE OF MARKED WHALES. Report on Whale Marking in Japan, Japanese Fisheries Agency, Tokyo, no. 4. 18-20 p. April 1953. [From Journal of Mammalogy 35(1).]
The Journal of Mammalogy 35(1), Feb. 1954, lists a number of other Japanese technical articles on whales, including some on marking in various geographic areas.

NORSK HVALFANGST-TIDENDE. This Norwegian journal, volume 42 of which was being published in 1953, is a leading source of information on whales, whaling statistics, and the whaling industry. It publishes, for example, papers on catch and resulting products of each Antarctic whaling season. Fortunately, many of the papers are in English as well as Norwegian. The journal should be seen by anyone seriously interested in whaling or whale conservation. Few titles appearing in it can be listed in Wildlife Review, but many or most are listed in Polar Record.

Paulian, Patrice. SUR LA PRÉSENCE AUX ILES KERGUELEN D'HYDRURGA LEPTONYX (BL.) ET D'ARCTOCEPHALUS GAZELLA (PET.) ET NOTES BIOLOGIQUES SUR DEUX PHOCIDÉS. Mammalia 16(4): 223-227. 1952. [From Polar Record 7(47).]
"Observations on Elephant Seals, Leopard Seals and Fur Seals in 1951."

Robertson, Robert Blackwood. OF WHALES AND MEN. Alfred A. Knopf, N. Y. (McClelland & Stewart in Canada.) xii + 300.p., illus. 1954. $4.50.
A fascinating book that the reviewer read word for word and greatly enjoyed. The author is a doctor and psychiatrist with much military experience who served as medical officer with a large Antarctic whaling expedition in the 1950-51 season. He was interested in whaling to begin with and resolved to bring back a good picture of modern whaling and whalers. His book is lively and nontechnical, with anecdotes, salty dialog, and character sketches interwoven with interesting accounts of work and machines. The reader learns of the parts and functions of the great factory ship, equipped with the latest electronic devices as well as some of the oldest tools known to whaling, and of the corresponding mixture of science and tradition in the crew. He learns how gunners on catcher ships pursue their prey, and how the largest whales are reduced to oil and meal in a few hours. Whalemen are an odd and interesting group, proud and jealous of their specialties but united in continual attempts to slip violations of the international whaling convention past the conscientious inspector for the British government. The variety and importance of products obtained from whales is surprising, as is the elaborateness of modern whaling. All of these things are about as well explained as is possible in a popular book.

Robins, J. P. (Marine Biol. Lab., Cronulla, N.S.W.) OVULATION AND PREGNANCY CORPORA LUTEA IN THE OVARIES OF THE HUMPBACK WHALE. Nature 173(4396): 201-203, illus. Jan. 30, 1954.

Scheffer, Victor B., and Ford Wilke. (Colo. A & M Coll.) RELATIVE GROWTH IN THE NORTHERN FUR SEAL. Growth 17: 129-145, illus. 1953.
Statistical study of 5 measurements, and "selected measurements of known age fur seals from newborn to age ten years, together with measurements of older, full-grown seals of uncertain age." Authors' summary: "The maximum life span of the fur seal...is believed to be 30 years. Newborn males average ...5.4 kg. and females 4.8 kg. Both sexes grow steadily until year 7 or 8,

MAMMALS--MARINE--Continued

when the female attains full size and the male begins suddenly to grow. When full-grown, year 13 or more, the males average 186 kg., or 4-1/2 times the weight of the females. Newborn males average in body length 659 mm. and females 631 mm. When full-grown, males average 1,985 mm. and females 1,278 mm. The growth of the hind flipper parallels that of body length. Dentinal layers on the teeth show that growth is slower at one season of the year (probably in summer). The skull of the male apparently continues to grow after mid-life. The rate of suture closure is variable and, like body size, is a poor indication of age."

Stackpole, Edouard A. THE SEA HUNTERS: THE NEW ENGLAND WHALEMEN DURING TWO CENTURIES, 1635-1835. J. B. Lippincott Co., Philadelphia & N. Y. 510 p., illus. 1953. $7.50. [From review in Pacific Discovery 7(1).]
"...scholarly yet excitingly readable account of the 'golden age' of whaling."

Thompson, Seton H. (US F&WS.) ALASKA FISHERY AND FUR SEAL INDUSTRIES: 1950. U. S. Fish and Wildlife Service, Statistical Digest no. 29. iv + 68 p., illus. 1953. 35¢ from Superintendent of Documents.
Section on fur seals gives information on populations, harvests, pelt prices, administration, status of natives, etc. The herd numbered about 1,600,000, which is considered maximal under present system of management. Census was made from life tables, counts of harem bulls, and trend of kill. Harvest of 1950 was 60,204. Several hundred dead seals were washed up on beaches of Washington and Oregon in winter of 1950 following exceptionally cold, stormy weather. Most were young of the year. Fox trapping on the Pribilofs was resumed in 1950-51. The take totaled 1,426. Efforts were made to exterminate the fox population of St. Paul Island because of poor pelt quality. Reindeer on St. Paul numbered only 8; apparently none remain on St. George.

Turbott, E. G. SEALS OF THE SOUTHERN OCEAN. In Simpson, Frank, editor, The Antarctic Today: A Mid-Century Survey by the New Zealand Antarctic Society. A. H. & A. W. Reed, Wellington, N. Z. 195-215 p., illus. 1952.

MAMMALS--OTHER GROUPS

Fitch, Henry S., and Lewis L. Sandidge. (U. Kans.) ECOLOGY OF THE OPOSSUM ON A NATURAL AREA IN NORTHEASTERN KANSAS. University of Kansas Publications, Museum of Natural History 7(2): 305-338, illus. Aug. 1953.
Based on live trapping, tracking, and study of scats. Subjects treated include: habitat, behavior, home range and movements, dispersal of young, feeding habits, weights and condition, effects of toe clipping (poor, slow healing), reproduction, numbers of young, sex and age composition of population, population density, and mortality factors. No territoriality was found. Home ranges averaged about 30 acres. Young males wandered much more than young females. Winter weight losses were marked, often critical by spring. All, even yearlings, bred in Feb. and again in spring. The later litters were less successful. Young from early litters dominated the populations. Average of 28 litters was 7.4. Annual turnover was about 95%, with some 70% mortality and 25% departure from area. Causes of mortality are not well known, but disease and predation by great horned owls was noted.

Reynolds, H. C. THE OPOSSUM. Scientific American 188(6): 88-95. June 1953. [From Journal of Mammalogy 35(1).]

Wiedorn, William S. (La. St. School of Medicine, New Orleans.) A NEW EXPERIMENTAL ANIMAL FOR PSYCHIATRIC RESEARCH: THE OPOSSUM, DIDELPHIS VIRGINIANA. Science 119(3090): 360-361. March 19, 1954.
Includes detailed account of changes involved in the catatonic-like state of playing dead.

BIRDS--GENERAL

Barruel, Paul. VIE ET MOEURS DES OISEAUX. Horizons de France, 39 rue du General-Foy, Paris. 205 p., illus. 1953. 3800 francs (about $12.00). [From review by Monica de la Salle, Audubon Magazine 56(2).]

"I know of no other work in print which gives such an excellent summary of bird life for the general public. Taking examples from the world over, including many of the latest theories regarding bird behavior, it deals in popular style with daily activities, locomotion, food, reproduction, song, territory, nests, eggs, young, parasitic birds, migration and its problems, solitary and social birds, habitats, distribution, population, etc. There is a short bibliography and a summarized classification of birds... Both the photographs--reproduced by a process little known in this country, which gives them surprising sharpness and depth--and the color reproductions of Mr. Barruel's watercolors are superb."

Benoit, J., and others. TRAITÉ DE ZOOLOGIE--ANATOMIE, SYSTEMATIQUE, BIOLOGIE. TOME XV--OISEAUX. Masson et Cie., Paris. (Walter J. Johnson, N. Y.). 1164 + 3 pl., illus. 1950. 6000 fr.; $18.00. [From long review by Henri C. Seibert, Quarterly Review of Biology 26(4).]

An important, modern, encyclopedic treatise on birds by several authors. Structure and function are treated at length under numerous headings, including nutrition, social life, ecology, and migration. The systematic section (by J. Berlioz) takes up the birds of the world family by family. Major references are cited for each topic. Numerous illustrations, tables, and graphs.

Blake, Charles H. (Mass. Inst. Tech.) LEG SIZES AND BAND SIZES; FIRST REPORT. Bird-Banding 25(1): 11-16, illus. Jan. 1954.

Simple gauge for exact determination of leg size; amount of space needed between leg and band; statistical distribution of leg sizes; table and discussion of band sizes suitable for various small birds.

Borror, Donald J., and Carl R. Reese. (Ohio St. U.) THE ANALYSIS OF BIRD SONGS BY MEANS OF A VIBRALYZER. Wilson Bulletin 65(4): 271-276, illus. Dec. 1953.

Yields graphic record electrically. "...not only gives a picture of the minute details of rhythm but shows all the frequencies present and gives some data on loudness."

Cott, Hugh B. (U. Mus. Zool., Cambridge, Eng.) THE EXPLOITATION OF WILD BIRDS FOR THEIR EGGS. (Last part.) Ibis 96(1): 129-149. Jan. 1954.

Egg-gathering is discussed in detail, species by species. Large-scale egging is still important in many places and many species suffer from it. It has contributed to extinction of some species and to marked reduction and local extermination of others. Managed egging is often well tolerated. "Renewed vigilance and efforts towards rational control, based upon fundamental research, enforced legislation, and enlightened education, are needed to safeguard the world's bird colonies as a permanent asset of scientific, economic and aesthetic importance." Bibliography of hundreds of references.

Gabrielson, Ira N., Ludlow Griscom, and Hoyes Lloyd. REPORT OF THE AMERICAN ORNITHOLOGISTS' UNION ADVISORY COMMITTEE ON BIRD PROTECTION. Auk 71(2): 186-190. April 1954.

Reports briefly on many aspects of bird preservation, including changes in hunting regulations, new refuges, status of ivory-billed woodpecker and whooping crane, and threats to existing parks and refuges.

Whitlock, Ralph. RARE AND EXTINCT BIRDS OF BRITAIN. Phoenix House, Ltd. (London). 224 p., illus. 1953. 21s. [From review by N. B. Kinnear, Nature 172(4388).]

Factors involved in the extermination, rarity, or localism of many species are discussed. Kinnear's review points out some weaknesses in the book.

BIRDS--GENERAL--Continued

Wight, Howard M. (Mo. Cons. Comm.) A SUGGESTED METHOD OF CAPTURING BIRDS WITH A NARCOSIS-PRODUCING DRUG. Presented at 15th Midwest Wildlife Conference, Chicago, Ill., Dec. 9-11, 1953. 1-3 p.
Report of pen tests of Avertin (Winthrop Stearns trade name for tribromo ethanol solution). The drug is diluted with ethyl alcohol to desired degree, coated on bait, and allowed to dry. Concentration to be used depends on pen tests with species in question, but usually ranges from 10% to 2½%. The drug breaks down into irritant chemicals within a few hours when exposed to sunlight, within less than a day when exposed to light in moderate shade. The author believes it should have further testing for mass capture of upland birds that can be attracted to bait. It should not be used with waterfowl for they may drown. Period of narcosis can be shortened by injecting Metrazol (brand name of pentylenetetrazol).

Williams, George G. (Rice Inst.) THE ORIGINS AND DISPERSAL OF OCEANIC BIRDS. Texas Journal of Science 4(2): 139-155. June 1952.

Wolfson, Albert, committee chairman. UNPUBLISHED THESES IN ORNITHOLOGY. Auk 71(2): 191-197. April 1954.
Lists 130 M.S. and Ph.D. theses, none of which were known to have been published. Many of them are of interest to wildlife biologists.

BIRDS--MORPHOLOGY, PHYSIOLOGY, BEHAVIOR, MIGRATION

Armstrong, Edward A. THE BEHAVIOR OF BIRDS IN CONTINUOUS DAYLIGHT. Ibis 96(1): 1-30, graphs. Jan. 1954.
Based on studies in Swedish Lapland and review of literature. Discusses activity periods, length of nesting season, and significance of cryptic coloration. "Light appears to be the dominant external factor governing bird activity in the arctic."

Bailey, Robert E. ACCESSORY REPRODUCTIVE ORGANS OF MALE FRINGILLID BIRDS: SEASONAL VARIATIONS AND RESPONSE TO VARIOUS SEX HORMONES. Anatomical Record 115: 1-19, 3 pls. 1953. [From Auk 71(1).]

Burger, J. Wendell. (Trinity Coll.) THE EFFECT OF PHOTIC AND PSYCHIC STIMULI ON THE REPRODUCTIVE CYCLE OF THE MALE STARLING, STURNUS VULGARIS. Journal of Experimental Zoology 124(2): 227-239. Nov. 1953.
Report of experiments and discussion of literature.

Cullen, J. M. (Oxford U., Eng.) THE DIURNAL RHYTHM OF BIRDS IN THE ARCTIC SUMMER. Ibis 96(1): 31-46, graphs. Jan. 1954.
Study of 3 species of sea birds at Jan Mayen Island.

Eyster, Marshall B. (S. W. La. Inst.) QUANTITATIVE MEASUREMENT OF THE INFLUENCE OF PHOTOPERIOD, TEMPERATURE, AND SEASON ON THE ACTIVITY OF CAPTIVE SONGBIRDS. Ecological Monographs 24(1): 1-28, illus. Jan. 1954.

Farner, D. S., L. R. Mewaldt, and S. D. Irving. (St. Coll. Wash.) THE ROLES OF DARKNESS AND LIGHT IN THE PHOTOPERIODIC RESPONSE OF THE TESTES OF WHITE-CROWNED SPARROWS. Biological Bulletin 105(3): 434-441. Dec. 1953.

Frings, Hubert, and Joseph Jumber. (Pa. St. Coll.) PRELIMINARY STUDIES ON THE USE OF A SPECIFIC SOUND TO REPEL STARLINGS (STURNUS VULGARIS) FROM OBJECTIONABLE ROOSTS. Science 119(3088): 318-319. March 5, 1954.
Distress call, obtained by shaking starling by legs, was recorded and broadcast from sound trucks. Several major roosts were cleared up, virtually freeing 2 small towns from starlings. The sound is easily heard by man. Effects on starlings are surprisingly lasting, suggesting that the frightened birds leave some warning odor. [This paper has created much interest and the method is being tried with other undesirable bird concentrations.]

BIRDS--MORPHOLOGY, PHYSIOLOGY, BEHAVIOR, MIGRATION--Continued

Griffin, Donald R. ACOUSTIC ORIENTATION IN THE OIL BIRD, STEATORNIS. Proc. Nat. Acad. Sci. 39: 884-893. 1953. [From Auk 71(1).]
"Evidence to show that Steatornis 'guides its flight through dark caves by a type of acoustic orientation similar to that used by bats, but the oil bird employs for this purpose short pulses of sound that lie well within the frequency range of human hearing.'"

Haartman, Lars von. WHAT CAUSES THE PIED FLYCATCHER (MUSCICAPA HYPOLEUCA) TO FEED ITS YOUNG? Die Vogelwarte 16(4): 157-164. 1953. [From informative review by Frances Hamerstrom, Bird-Banding 25(1).]
In German. "This is an outstanding paper skillfully combining experimental and ecological approaches." Food-demanding behavior of young governs frequency of feeding. This, of course, varies with number of young. Significance of hunger calls as releasers is also discussed on the basis of experiments.

Hanson, Harold C. (Ill. Nat. Hist. Survey, Urbana.) APPARATUS FOR THE STUDY OF INCUBATED BIRD EGGS. Journal of Wildlife Management 18(2): 191-198, illus. April 1954.
Accurate egg volumeter, portable candler, and method of photographing embryos in intact eggs. Utilization and values of these tools are explained. With portable candler and series of photos, stage of egg development can be determined easily in field.

Miller, Alden H. (MVZ., U. Calif. at Berkeley.) THE OCCURRENCE AND MAINTENANCE OF THE REFRACTORY PERIOD IN CROWNED SPARROWS. Condor 56(1): 13-20, graph. Jan.-Feb. 1954.

Salt, W. Ray. (Dept. Anat., U. Alberta.) THE STRUCTURE OF THE CLOACAL PROTUBERANCE OF THE VESPER SPARROW (POOECETES GRAMINEUS) AND CERTAIN OTHER PASSERINE BIRDS. Auk 71(1): 64-73, illus. Jan. 1954.
Structure is described in detail. "It is suggested that the cloacal protuberance can be used as an external indicator of sexual development in some passerine birds."

Schwartzkopff, J. THE SENSE OF HEARING IN BIRDS. Journal fûr Ornithologie 93(2): 91-103. 1952. [From review by D. S. Farner, Bird-Banding 25(1).]
"...a rather condensed review of the available knowledge of this rather neglected field in which the author has been one of the leading investigators." In German.

Sturkie, Paul D. (Rutgers U.) AVIAN PHYSIOLOGY. Cornell University Press. 443 p., illus. 1954. $6.00. [From review by P. L. Piercy, Journal of the Amer. Vet. Med. Assn. 124(925).]
Piercy considers this book excellent, well written, and well documented. It should be valuable to wildlife biologists in need of basic information on physiology of birds. Five chapters are said to "deal commendably with a modern interpretation of endocrine physiology."

Tinbergen, Niko. THE HERRING GULL'S WORLD. New Naturalist Monograph. Collins, London. [Pages not stated.] Illus. 1953. 18s. [From review by D. G., British Birds 46(11).]
"Seldom, if ever, can the behavior of any animal have been studied in such detail and presented with such lucidity... All of the Herring Gull's reactions to its environment seem to have been covered...The behavior of many other creatures...is discussed in detail wherever it is of help in clarifying gull behavior... If anyone interested in animal behavior cannot afford to buy this book he must beg or steal it."

BIRDS--MORPHOLOGY, PHYSIOLOGY, BEHAVIOR, MIGRATION--Continued

Wilkinson, D. H. THE RANDOM ELEMENT IN BIRD NAVIGATION. Journal of Experimental Biology 29(4): 532-560. 1952. [From abstract by D. S. Farner, Bird-Banding 25(1).]

"The author has applied a careful mathematical analysis to the displacement experiments of Rüppell and Griffin. The conclusion of this analysis is that the results are exactly what would be expected on the base of random search on the part of the displaced birds. The author hesitates to assert that bird navigation is necessarily this simple and prefers to state that nothing further than this can be deduced from the presently available data."

Wolfson, Albert. (Northwestern U.) NOTES ON THE CLOACAL PROTUBERANCE, SEMINAL VESICLES, AND A POSSIBLE COPULATORY ORGAN IN MALE PASSERINE BIRDS. Bulletin of the Chicago Academy of Sciences 10(1): 1-23, illus. April 1954.

Occurrence and appearance in different species; structure and function; importance in laboratory and field studies.

BIRDS--MANUALS, FAUNAS, COMMUNITIES

Baxter, Evelyn V., and Leonora J. Rintoul. THE BIRDS OF SCOTLAND/ THEIR HISTORY, DISTRIBUTION AND MIGRATION. Oliver and Boyd, Ltd. (London and Edinburgh). Vol. 1, liii + 352 p., + 12 pl. Vol. 2, 353-763 p. + 14 pl. 1953. 63 s. [From review by Seton Gordon, Nature 172(4387).]

"This magnificent work, in two volumes, forms an outstanding contribution to the ornithology of the British Isles... The information...is accurate and scholarly: it embraces records old and new..." Causes of population changes are discussed, at least for some species, and much other information is included.

Cruickshank, Allan D. CRUICKSHANK'S POCKET GUIDE TO THE BIRDS: EASTERN AND CENTRAL NORTH AMERICA. Dodd, Mead & Co., N. Y. 216 p., illus. 1953. $2.95. [From review by Monica de la Salle, Audubon Magazine 56(1).]

"Written expressly for the beginner, it will give him all the basic information for a good start, with a visual key and a system of reducing that blur of feathers to its precise identity by group or family, size, color, silhouette, actions, pattern of field marks, flight, range and season of occurrence, habitat preference, call, and song... With all this in hand, we feel sure that many new birders will rapidly graduate to the more technical field guides of Peterson and Pough." Illustrated with 72 color photographs and 78 drawings.

Hensley, M. Max. (Gettysburg Coll.) ECOLOGICAL RELATIONSHIPS OF THE BREEDING BIRD POPULATION OF THE DESERT BIOME IN ARIZONA. Ecological Monographs 24(2): 185-207, illus. April 1954.

Good report of population studies made at Organ Pipe Cactus National Monument. The area and its vegetation are described. Bird populations are considered from several viewpoints, including variation with habitat; breeding niches; territorial behavior; plant utilization for food, water, and nesting; nesting success; comparisons with similar studies; and derivation of the fauna. The paper is especially significant because the work was done in a very large and almost virgin area of exceptionally rich desert on the Mexican border.

Hudson, George E., and Charles F. Yocom. (St. Coll. Wash.) A DISTRIBUTIONAL LIST OF THE BIRDS OF SOUTHEASTERN WASHINGTON. Research Studies of the State College of Washington 22(1): 1-56, illus. March 1954.

Describes area and gives annotated list containing information on geographic and seasonal distribution and time of breeding. Eight good plates show nature of country.

BIRDS--MANUALS, FAUNAS, COMMUNITIES--Continued

Kemsies, Emerson, and Worth Randle. BIRDS OF SOUTHWESTERN OHIO. Distributed by Birds of Southwestern Ohio, 724 Dixie Terminal Building, Cincinnati 2, Ohio. xii + 74 p., illus. [1953?] $2.80 postpaid, cloth. [From review by F. B. C., Ohio Conservation Bulletin 18(4).]

Covers Hamilton, Clermont, Butler, and Warren counties and western parts of Brown and Clinton counties. Annotated list of 314 forms, with description of area, history of ornithology in area, discussion of where to find birds, local population studies, bibliography, and index. Ten photographs.

Murphy, Robert Cushman, and Dean Amadon. (Amer. Mus. Nat. Hist., N. Y.) LAND BIRDS OF AMERICA. McGraw-Hill Book Co., N. Y. 240 p., illus. 1953. $12.50. [From review by Monica de la Salle, Audubon Magazine 55(6).]

"In prose that is concise but casual and full of vivid sidelights the authors have given an account of such fundamentals as flight, migration, and anatomy, and the characteristics in appearance and behavior of each of the families of birds. And they have assembled a truly superb set of photographs, nearly all in color, showing birds in their natural habitats and going about their daily activities." The photographs are by many experts and no doubt account for the cost of the book.

Peterson, Roger Tory, Guy Mountfort, and P. A. D. Hollom. A FIELD GUIDE TO THE BIRDS OF BRITAIN AND EUROPE. Houghton Mifflin Co., Boston. 318 p., illus. 1954. $5.00. [From Bul. Mass. Aud. Soc. 38(4) and Sci. News Letter 65(15).]

"The book uses the familiar Peterson system with recognition pictures of every bird, showing plumage variations, a detail which requires 1100 illustrations. Forty pages of plates are in full color. There are also 400 maps showing summer and winter distribution. In the text are given call notes, song, habits, and habitat. Peterson's co-authors are both ornithologists of wide experience with birds in Great Britain and the Continent." Among the illustrations are silhouettes to help identify birds on the wing.

Pough, Richard H. AUDUBON GUIDES. Doubleday & Co., N. Y. 664 p., illus. 1953. $5.95. [From Bul. Mass. Aud. Soc. 38(5).]

Pough's Land Bird Guide and Water Bird Guide have now been combined into one volume. All original plates are present. Considering quality of text, number of pages, and number of color illustrations, the book is a good buy at the price.

Thompson, William Lay. (U. Texas.) THE ECOLOGICAL DISTRIBUTION OF THE BIRDS OF THE BLACK GAP AREA, BREWSTER COUNTY, TEXAS. Texas Journal of Science 5(2): 158-177, illus. June 1953.

BIRDS--CONTROL, MORTALITY

Brouwer, G. A. THE QUESTION OF OCEANIC OIL POLLUTION. Die Vogelwarte 16(4): 167-170. 1953. [From review by Frances Hamerstrom, Bird-Banding 25(1).]

In German. "Mass die-offs of oceanic birds from oil have occurred over a forty year period, but fortunately the dire predictions of 1925 have not been fulfilled...Bird species affected are tabulated on a percentage basis, and international attempts to alleviate pollution are given chronologically." Causes and methods of preventing oil pollution are discussed.

Kalmbach, E. R. (US F&WS, Denver 2, Colo.) PIGEON, SPARROW AND STARLING CONTROL. Pest Control 22(5): 9-10, 12, 30-32, 54, illus. May 1954.

First of 2 parts. Consideration is given to trapping, poisoning, gassing, use of barriers, and sanitation practices.--R. T. Mitchell.

May 1954

BIRDS--QUAIL

Clarke, C. H. D. (Ont. Dept. Lands & For., Toronto.) THE BOB-WHITE QUAIL IN ONTARIO. Ontario Department of Lands and Forests, Technical Bulletin, Fish & Wildlife Series no. 2. 1-11 p., map. 1954. Reprinted from "The Bulletin" (of the Federation of Ontario Naturalists) no. 63, Jan. 1954.

Although popularly and nostalgically written, this paper is a detailed historical account of the rise and fall of quail in the province, with discussion of factors involved. Quail were rare, if present, when settlement began, but pioneer-type farming was favorable and they flourished in southern Ontario, with ups and downs, for 100 years, often providing ample hunting. The downs are ascribed to severe winters. After each down following 1856, the range grew a little smaller. Changed and intensified agriculture and other features of economic progress gradually restricted the range and reduced populations until no hunting could be permitted. Now quail are hard to find in Ontario, although up a little in recent years. Management methods that should work are outlined. "If there was food, both grain and green, for every cover even in Essex you would notice the increase in quail, and in Norfolk there might even be shooting again. If to that could be added cover for all the food now available, things would really look up."

Haugen, Arnold O., and Frank W. Fitch, Jr. (Ala. Polytechnic Inst.) SEASONAL AVAILABILITY OF CERTAIN QUAIL FOODS AS DETERMINED FROM GROUND SAMPLES. Presented at 7th An. Conf., SE Assn. of Game and Fish Commissioners, Chattanooga, Tenn., Oct. 11-14, 1953. 7 p. + 3 p. of graphs.

Quantitative study of seed yield and seasonal availability of seeds of L. bicolor, L. thunbergii, L. cyrtobotrya, and partridge pea (C. fasciculata). Data are also given on numbers of seed per cc. and numbers of cc. per pound. Processes of collecting seeds and isolating them from other ground matter are described. It was found that for year round dependable food supply, bicolor was best of plants studied. Shrub lespedezas, however, take a few years to reach full production. Partridge pea produces as heavily its first year as bicolor does in its fourth, but thereafter declines if not disked or burned at least every 2 years. Partridge peas also are less available in winter. A combination of the two should be of value where quick but lasting results are wanted.

Lay, Daniel W. (Tex. Game Comm.) QUAIL MANAGEMENT HANDBOOK FOR EAST TEXAS. Texas Game and Fish Commission, Bulletin no. 34. (6) + 45 p., illus. 1954.

This bulletin is scientifically sound, yet attractive, popular, and concise. It is a good example of application of research results toward better wildlife management. Well deserved emphasis is placed on the population significance of rapid turnover in the species. Strict regulations, predator control, and stocking are debunked as quail management measures. Many of the management methods recommended would be valid over the entire quail range, but some are especially applicable in areas where cover shortage is apt to be severe. Quail abundance is related to land use, and the decreasing quail population of Texas is attributed to reduction of food and cover by clean farming and overgrazing. Quail managers in eastern U. S. will note that importance of nesting cover is not stressed. Multiflora rose is praised as a source of cover that is consistent with modern farming. Bicolor lespedeza is considered costly, troublesome, and no more valuable than native food crops.--Fred H. Dale.

Legler, Eugene, Jr. (Tenn. Game Comm.) QUAIL WING SURVEY 1951-1954. Tennessee Conservationist 20(5): 23. May 1954.

Tables show age groups of quail bagged in 1953-54 season, and percentage of young and adults in each of the 4 seasons as well as in first 4 days of each season. The 1953 hatch was good in Tenn., with 77% young bagged. Thanksgiving holidays, the first part of season, are not too early to start hunting, for at that time 97%-99% of quail bagged are 10½ weeks or older.

BIRDS--QUAIL--Continued

Lehmann, V. W. (Kingsville, Texas.) BOBWHITE POPULATION FLUCTUATIONS AND VITAMIN A. Trans. 18th N. A. Wildl. Conf. 199-245 p., graphs. 1953.
Quail population fluctuations, breeding, food habits, parasites, cover, and intra-specific tolerance were studied in Texas from 1949-1951. Liver reserves of vitamin A corresponded with periods of abundance and scarcity of quail. Diet, age, and sex influenced the reserve levels, but there seemed to be no correlation between vitamin A and body weight or awakening of breeding urge. Tall grass appeared to be the basic habitat type without which quail management had no significant potential. An important, detailed paper.--L. F. Stickel.

Petrides, George A. (Mich. St. Coll.) THE BOBWHITE QUAIL AS A POSSIBLE GAME BIRD IN SOUTHERN MICHIGAN. Michigan State College, Agricultural Experiment Station, Quarterly Bulletin 36(2): 195-198, map. Nov. 1953.
Counts demonstrated that there are huntable quail populations in many parts of southern Michigan. Properly regulated hunting would take only part of the birds that are doomed to die in some manner. "In Wisconsin a 30-day season results only in an estimated kill of 5 percent of the fall population though at least 40 percent could safely be taken." It is recommended that quail hunting be legalized experimentally in certain Michigan counties or townships.

Reid, Vincent H. (US F&WS, Alexandria, La.) MULTIPLE LAND USE: TIMBER, CATTLE, AND BOBWHITE QUAIL. Trans. 18th N. Amer. Wildl. Conf. 412-418 p. 1953.
With proper coordination and use of grazing and fire, timber, cattle and quail can be produced on southern pinelands. Methods and results are described.--L. F. Stickel.

BIRDS--PHEASANTS

Blouch, Ralph I., and L. L. Eberhardt. (Mich. Dept. Cons.) CHANGES IN PHEASANT POPULATIONS AND LAND USE ON THE PRAIRIE FARM. Presented at 15th Midwest Wildlife Conference, Chicago, Ill., Dec. 9-11, 1953. 1-8 p., graphs and maps.
The Prairie Farm in Saginaw Co., Mich., used to team with pheasants and was much studied by wildlife biologists (WR 70:37). Ditch banks, dikes, and roadsides were brushy. Many fields were not plowed in fall, and some were not harvested. Now clean, intensive farming is the rule. Most of the brush and some of the woodlots are gone and fields are well farmed. Pheasant populations dropped as various types of cover they required were removed, and they have remained low, much lower than those of surrounding areas. "The high years of the early 1940's yielded harvests as great as 15 to 20 cocks per 100 acres, and bags since 1948 have remained between 2 and 3 cocks per 100 acres."

Delacour, Jean. PHEASANT BREEDING AND CARE. All-Pets Books, Fond du Lac, Wis. xiv + 98 p. 1953. $3.00. [From brief review by R. W. Storer, Auk 71(1).]
"Denley's work [Ornamental Pheasants, Their Breeding and Care] has been revised by Delacour, who is well known both as an aviculturist of long experience and as an authority on the pheasants of the world, and he was assisted by Prof. Erwin L. Jungherr, who contributed the chapter on the diseases of pheasants, and by W. F. Gimmer, who helped prepare the sections dealing with game pheasants and their propagation. This book is authoritative and should prove of great value to anyone interested in keeping pheasants."

Fischer, Bob. (N. D. Game Dept.) HAY HARVEST AND THE FLUSHING BAR. North Dakota Outdoors 16(10): 4-7, illus. April 1954.
Mowing often causes 100% loss of pheasant nests. More serious is the great loss of hens. In southwestern N. D. a hen was killed for every 8.1 acres of grass mowed and every 6.5 acres of alfalfa. Loss of hens and young in one county runs over 2000 per year although there are only about 3000 acres of

BIRDS--PHEASANTS--Continued

hayland. Flushing bars can eliminate much of the loss of hens. They can be made simply and cheaply to fit practically any tractor. Mechanical drawings and specifications are given for bars to be mounted on a variety of tractor makes. The N. D. Game and Fish Department will supply more detailed instructions on request.

Friley, Charles E., Jr. (Mich. Dept. Cons.) DAILY PATTERNS OF PHEASANT HUNTING PRESSURE. Journal of Wildlife Management 18(2): 255-259, graphs. April 1954.

Study of hunting effort at the Rose Lake station, Mich., under regulations that permitted hunting to start at 7 or 10 a.m. in different seasons. "The effect of a shorter hunting day appears to be that significantly greater gun pressure is brought to bear on the game population in the early available hunting hours of any Saturday or Sunday than when a full day is available for hunting."

Klonglan, Eugene D. (Iowa St. Coll.) PHEASANT COUNTS AND DEWFALL. Iowa Conservationist 13(3): 17, 23, illus. March 1954.

Amount of dew has significant effect on number of pheasants seen along early morning census routes. Dewfall is more or less indicative of a whole complex of weather conditions. It can be measured simply by comparing dew on a wood block with a series of photographs (the system of Duvdevani). Pheasant counts should be made at same time relative to sunrise. August is best month for these counts in Iowa.

Lyon, L. Jack. (Colo. A & M Coll.) PHEASANT WINTER ROOSTING COVER PREFERENCE IN NORTH-CENTRAL COLORADO. Journal of Wildlife Management 18(2): 179-184. April 1954.

Fourteen winter-cover plots were studied. Heavy weeds and cattails were found to be highly preferred winter roosting types. "In future habitat development programs, consideration should be given to the inclusion of herbaceous cover on the periphery of the major planting. Species used should stand at least 15 inches high under all weather conditions and should not form a close-knit overhead structure."

MacMullan, R. A. THE LIFE AND TIMES OF MICHIGAN PHEASANTS. Michigan Department of Conservation. 63 p., illus. 1954.

This booklet is a highlight in at least 3 respects. In the first place, it is an attempt by a competent research worker to interpret results of research to the nontechnical man. This difficult task, we believe, is admirably accomplished. Secondly, although gaps in our knowledge are frankly admitted, the factual basis for Michigan's pheasant management is strongly presented. The reader is left with the conviction that the program is not based upon mere opinion. Thirdly, skillful use is made of Warbach's cartoons to establish all salient points. A casual reader could gain the major impressions without reading anything but the cartoons. Although this is a popular, extension-type paper that contains no references, it is technically sound and can be read with profit by technical workers. It is based on Michigan's PR Project 38-R, but draws freely upon the results of research done elsewhere.--Fred H. Dale.

Mohler, Levi L. (Nebr. Game Comm.) PHEASANT UPS AND DOWNS. Outdoor Nebraska 32(2): 23-24, illus. Spring 1954.

Pheasants are down again in Nebraska, with only about 40% as many in 1953 as in 1945. Number of young per brood has changed little through the years despite population fluctuations. But in 1948 and 1949 when the population was gaining, over 80% of hens had young with them in August, while the comparable figure in 1952 and 1953 was not over 65%. On a statewide basis, pheasants increased in the 1938-42 period, decreased from 1943 into 1947, increased from 1948 into 1952, and declined again in 1953. The high of 1952 was lower than that of 1942. Reasons for these changes are unknown.

BIRDS--PHEASANTS--Continued

Smith, Eldon H. (S. D. Dept. Game.) SPOTLIGHTING FOR BETTER PHEASANT MANAGEMENT. South Dakota Conservation Digest 21(4): 2-4, illus. April 1954.
Previous spotlighting methods proved inadequate when many pheasants were wanted for banding in late summer. Equipment finally adopted consisted of truck with spotlights and battery of floodlights above cab, and with portable generator for floodlights. When a bird is seen, the floods are turned off and the bird is picked up in the narrow light cone of a 100,000 candlepower spot. Then 2 men with long-handled nets converge on the bird. Pheasants are most easily caught between 2 a.m. and dawn. At best, 105 birds per night have been caught. One aim is to determine distribution of kill during season. Of 62 bands returned, distribution during 30-day season was: first 2 days, 42%; first whole week, 68%, 2nd week, 17%; 3rd week, 4%; last 9 days, 11%. Thus a 30-day season is only 15% harder on pheasants than a 2-week season. But it gives much more hunting opportunity. It was also found that pheasants travel little. Of banded birds shot, 84% had moved less than 2 miles; 58% had moved less than 1 mile.

Smith, Eldon H., John L. Seubert, and Carl G. Trautman. (S. D. Dept. Game.) THE USE OF BROOD ROUTES FOR MEASURING PHEASANT REPRODUCTIVE SUCCESS. Presented at 15th Midwest Wildlife Conference, Chicago, Ill., Dec. 9-11, 1953. 1-10 p., graphs.
South Dakota workers have experimented with standardized auto routes along which counts were made to determine average brood size, percentage of hens with young, number of young per hen, broods per mile, birds per mile, etc. Data from this source (1949-53) were compared with data from bag checks. "Poor correlation has been found between brood route indices and bag-check indices and subsequent breeding density levels determined by the rural mail carrier and crowing count surveys. It appears appropriate therefore, that brood survey methods be modified to place more emphasis on the bird per mile type of data. ...it is apparent that we have not been able to determine production success by running brood routes... The method may eventually be modified sufficiently to prove adequate, but it appears that a critical evaluation of its shortcomings is necessary.".

Wagner, Fred H. (Wis. Cons. Dept.) LONGER SEASON = MORE PHEASANTS. Wisconsin Conservation Bulletin 19(3): 14. March 1953.
"...pheasant hunters were able to take from 25 to 40 per cent more birds in that portion of the season after the first two weeks than they would have if the season was only two weeks long. Before 1951, the seasons were about ten days to two weeks in length. And it is already obvious that the increased cock harvest has not hurt our breeding success."

BIRDS--GROUSE, PARTRIDGE, ETC.

Anonymous. NEVADA EXPERIENCES FIRST EMERGENCY CLOSURE ON UPLAND GAME BIRDS. Nevada Fish and Game 1(1): 3-5, illus. Jan. 1954.
Chukar hunting success in Nev. has declined steadily since the boom year of 1951. The 1953 hatch was so poor that the season was closed in all but 5 counties. Drought apparently was a factor. Hunting statistics are given for 4 checking stations.

Buss, Irven O., and Byron A. Schottelius. (St. Coll. Wash.) BREEDING AGE OF BLUE GROUSE. Journal of Wildlife Management 18(1): 137-138. Jan. 1954.
"Collectively, this evidence indicates that: (1) blue grouse do not molt their outer two pair of juvenile primaries during the first fall of life; (2) at least some blue grouse retain the bursa of Fabricius until about two years of age when they apparently begin to breed...Further research should show that this species has a lower turnover rate than other gallinaceous birds...which have a higher reproductive potential."

Caswell, Edwin B. (5644 N. Sultana Ave., Temple City, Calif.) A METHOD FOR SEXING BLUE GROUSE. Journal of Wildlife Management 18(1): 139. Jan. 1954.
By coloration of feathers, especially on neck.

BIRDS--GROUSE, PARTRIDGE, ETC.--Continued

Dorney, Robert S. (Wis. Cons. Dept.) WISCONSIN RUFFED GROUSE 1949 TO 1953. Wisconsin Conservation Bulletin 19(4): 23-24, graph. April 1954.
Reports from a large group of selected hunters indicate that the population in northern and central Wis. was nearly constant 1950-53, with about 4 shot per 10 hours, but was a little higher in 1949, when 5.2 were shot per 10 hours.

Dorney, Robert S., and Helmer Mattison. (Wis. Cons. Dept.) TRAPPING TECHNIQUES AND MOVEMENTS OF BANDED RUFFED GROUSE. Presented at 15th Midwest Wildlife Conference, Chicago, Ill., Dec. 9-11, 1953. 1-5 p., illus.
Suggestions for effective use of mirror trap in spring, clover-leaf trap in spring and summer, and bob traps in winter. Many grouse caught were later trapped or shot. Winter travels of several miles were common (maps). Since grouse are not sedentary as previously believed, it is concluded that: 1. Management can be on extensive basis, for birds can move to good cover. 2. Study areas should be of 1 or 2 townships in size. 3. Older population studies are suspect because made on areas as small as 800 acres. 4. Drumming counts are preferable to flush counts because they can cover large areas. 5. Small overhunted areas should restock naturally and readily if surrounding areas are suitable. 6. Underharvesting may be less common than usually thought, for grouse may move long distances to good feeding grounds, such as roadsides, and there be shot heavily.

Hale, James B., Robert F. Wendt, and George C. Halazon. (Wis. Cons. Dept.) SEX AND AGE CRITERIA FOR WISCONSIN RUFFED GROUSE. Wisconsin Conservation Department, Technical Wildlife Bulletin no. 9. 1-24 p., illus. 1954.
Important methods study based on several hundred grouse collected in late summer and fall, 1949-51. Plucked, fully-grown, central tail feathers measure 15 cm. (5 7/8 in.) or more in males, less in females, with little overlap. Grouse with complete tail bands can be called males with 95.4% accuracy. Those with incomplete tail bands can be called females with 94.4% accuracy. Bursa of 5 mm. or less indicates adult. Molt progression and other wing feather characters that are described and illustrated also aid in aging. "The wing molt and contour critera are satisfactory substitutes for supplements to the bursa technique if the user can judge these feather characteristics with confidence. Care should be taken to check the outer three primaries for feather sheath remnants to verify the contour identification." A key is given for determining sex and age of Wis. grouse in fall.

Hanson, Harold C. (Ill. Nat. Hist. Survey, Urbana.) MUSKEG AS SHARP-TAILED GROUSE HABITAT. Wilson Bulletin 65(4): 235-241, illus. Dec. 1953.
Report of observations in the region of James and Hudson bays. "...muskeg apparently constitutes one of the primary habitats in the range of the nominate race, phasianellus..." Suitable foods are abundant and hummocks are used for dancing grounds. Fall movements probably are the result of seeking winter cover in the limited timber that is present.

Hardy, Frederick C. (Ky. Dept. Wildl. Resources.) ADAPTABILITY OF NORTHERN TECHNIQUES FOR RUFFED GROUSE CENSUS IN KENTUCKY. Presented at 6th Annual Conference, Southeastern Association of Game and Fish Commissioners, Oct 19-22, 1952, Savannah, Ga. 1-13 p. + 2 maps.
Four methods were studied comparatively. Author's conclusions: "1. The area drumming site count is a fairly reliable method for measuring male ruffed grouse populations on small areas in Kentucky, but is not recommended as a sole technique for indicating total populations. 2. The adult territory count probably is the most effective technique available for intensive studies of population density and reproduction on small areas in Kentucky. 3. The strip census method, as used in Kentucky, is apparently valueless for obtaining true samples of the existing low populations. Expansion of the census operation to increase chances of obtaining truer samples would be impractical. 4. The roadside drumming count technique, if conducted during the spring drumming season peak and if supplemented by sufficient breeding success data, is an effective means of establishing indices of population trends."

BIRDS--GROUSE, PARTRIDGE, ETC.--Continued

Hungerford, Kenneth E. (U. Idaho.) SOME OBSERVATIONS ON THE LIFE HISTORY OF THE IDAHO RUFFED GROUSE. Murrelet 34(3): 35-40, graph. Sept.-Dec. 1953.
Author's summary: "The Idaho Ruffed Grouse, as a distinct subspecies, is described relative to its taxonomic position and the life cycle. Observations on drumming, laying, incubation and hatching periods are presented. The organization and movements of the broods are described. Seasonal habitat, including winter, spring, summer and fall, is described including the movements during the year, diurnal movements and the important classes of food in each seasonal habitat."

Latham, Roger M. (Pa. Game Comm.) GROUSING ABOUT GROUSE. Pennsylvania Game News 25(2): 4-11, illus. Feb. 1954.
Ruffed grouse have become scarcer in Pa. owing to forest succession and an overabundant deer herd. But they are not being overhunted. Kills in a heavily hunted tract range from 4% to 18% of the population, while a 30% kill would be safe. In many areas of low hunting pressure it is likely that no more than 1% to 3% of the grouse are shot. Hunting just does not seem to be a limiting factor for grouse populations generally. Thinning by hunting probably is beneficial to the population and certainly prevents much natural waste. Figures from other states show that hunting even during cyclic lows is not harmful. It is recommended that regulations be very liberal during cyclic highs, and in mountainous areas even during lows. During lows, however, some protection should be given in agricultural areas where woods are relatively small and isolated and breeding stock might be cut too deeply.

Leonardis, Salvatore de. PRODUCTIVITY OF THE ROCK AND WILLOW PTARMIGAN. In Science in Alaska 1951, Proceedings 2nd Alaskan Science Conference, Alaska Div. AAAS. 334-336 p. [1953.]
Studies were made in 3 parts of Interior Alaska. Conclusions: "(1) Weather conditions were favorable during the nesting and incubation season of 1951 [i.e., dry and warm]. (2) Rock Ptarmigan averaged 6.7 young per brood, averaging slightly higher in the Steese Highway area than in the Forty-mile Road area, but indicative of good productivity in both areas. (3) Willow ptarmigan averaged 5.9 young per brood. Assuming an average of eight eggs per nest, at the time the young birds had become two-thirds grown there was only about a 25 percent loss. This indicates excellent productivity. (4) It is possible that yearly brood counts can be made in July in various areas scattered throughout Alaska to determine yearly productivity. These data could be compiled and used as a sound basis for hunting regulations of the current season."

Palmer, Walter L. (Mich. Dept. Cons.) AN ANALYSIS OF DEER-RUFFED GROUSE RELATIONSHIP DATA IN MICHIGAN. Presented at 15th Midwest Wildlife Conference, Chicago, Ill., Dec. 9-11, 1953. 1-5 + 6 p. graphs and table.
Field studies and analyses of hunter reports indicate that grouse are somewhat scarcer in areas of deer overbrowsing than in otherwise similar areas. "If our evidence is accurate, the advantages of an excessive deer herd...in maintaining openings and 'holding back' the forest from growing out of the brush stage may outweigh the disadvantage of slightly lower grouse production we have been getting in our badly browsed areas."

Schultz, Vincent. (Va. Polytechnic Inst.) STATUS OF THE RUFFED GROUSE IN TENNESSEE. The Migrant 24(3): 45-52, map. Sept. 1953.
Based on state game survey. Distribution and occurrence in state are reported in detail. Grouse are well distributed in eastern part of Tenn., sparingly in central part, and are absent in western part.

BIRDS--TURKEY

Bailey, R. Wayne. (W. Va. Cons. Comm.) RED FOX PREDATION ON WILD TURKEYS. West Virginia Conservation 18(1): 24-25. March 1954.
Describes a few instances of actual or attempted predation on turkeys by foxes, and gives 2 examples of broods surviving after loss of hens.

Burger, George V. (MVZ, U. Calif., Berkeley.) THE STATUS OF INTRODUCED WILD TURKEYS IN CALIFORNIA. California Fish and Game 40(2): 123-145, illus. April 1954.
Turkeys were not originally present in the state, but since 1928, 3062 turkeys and 311 eggs have been distributed in 118 plants. Only four of these plants were found successful in 1951. The best plant, and the only successful one in the Sierra, was the only one made with wild-trapped turkeys. It is believed that lack of wildness was a chief cause of failure of other releases. Further stocking should be with wild birds of pure Merriam strain. Some releases in southern Calif. may have failed because of poor water supply in summer and fall. "In the coastal areas live oak-grassland interspersions, provided with abundant permanent water, constitute the preferred habitat, and the critical season seems to be early fall, when critical factors limiting turkeys are food and water supplies. Although less evidence is available, winter food shortages may operate in a similar fashion for birds in the Sierra."

Fleming, Rose E. (Miss. Game Comm.) TURKEY HUNTER'S HEAVEN. Mississippi Game and Fish 17(8): 4-5, illus. March 1954.
How the hunters of Coahoma Co., Miss., brought back turkey hunting in an area where poaching had been a major factor. They organized clubs, got huge refuges set up on state and private lands, hired wardens, personally made poaching unpopular, and planted winter foods for turkeys: rye, wheat, and wild winter peas. Now they have "some 80,000 acres of good turkey habitat and a population that had risen in five years from a few hundred birds to anywhere from 1500 to 3000." As a result, Coahoma County is the only county in the state to have 2 seasons a year, and only 24 other counties have even one.

Schemnitz, Sanford D. (Box 3009, Univ. Sta., Gainesville, Fla.) TURKEY FOODS IN FLORIDA. Florida Wildlife 7(10): 27, 38. March 1954.
Semipopular report on contents of 32 crops and 2,775 droppings.

BIRDS--DOVES AND PIGEONS

Cummings, Edmund G., and Thomas L. Quay. (N. C. St. Coll.) FOOD HABITS OF THE MOURNING DOVE IN NORTH CAROLINA. Journal of the Elisha Mitchell Scientific Society 69(2): 142-149. Dec. 1953.
Detailed report on contents of 553 crops collected at all times of year (chiefly summer and fall) and in all regions of state (Eastern Piedmont represented by largest sample). Some leading foods, in decreasing order of importance, were: crab-grass, corn, foxtail, Paspalum, wheat, pokeweed, ragweed, galingale, soy-bean, cow-pea, and Croton. Seeds of cultivated plants were important throughout year. Usage of foods varied between portions of the state.

Kossack, Charles W., and Harold C. Hanson. (Ill. Nat. Hist. Survey, Urbana.) FOWLPOX IN THE MOURNING DOVE. Journal of the American Veterinary Medical Association 124(924): 199-201, illus. March 1954.
Two doves infected with this disease were found near Barrington, Ill. One of them manifested the disease only after 2 months of captivity, during which 2 other captives caught the disease. Vaccination protected the rest of the captive flock. Symptoms and various treatments are described. Wildlife biologists are urged to watch for this disease so that its population importance can be assessed.

Levine, N. D., H. C. Hanson, and C. W. Kossack. (U. Ill.) LEUCOCYTOZOON MARCHOUXI MATHIS AND LEGER, 1910 IN THE MOURNING DOVE. Proceedings Society of Protozoologists 4: 7. 1953.
Abstract only. This protozoan parasite was found in 5 adult and 5 young doves in Ill.

BIRDS--DOVES AND PIGEONS--Continued

Nelson, Frank P. (S. C. Wildl. Resources Dept.) BANDING OF DOVES TRACES MIGRATIONS. South Carolina Wildlife 1(2): 6-7, illus. Spring 1954.
Doves shot in S. C. come from many states (map), chiefly northeastern and north-central states. During Sept., S. C. hunters kill mostly birds raised in the state. During Dec. and Jan., they kill mostly birds raised in other states.

Putnam, L. S., and C. E. Knoder. (Ohio St. U.) FIVE NESTINGS OF A PAIR OF CAPTIVE MOURNING DOVES. Wilson Bulletin 65(4): 280. Dec. 1953.
Captives made 5 nesting attempts in one season. All attempts but the first were successful. Data are given on chronology.

Stewart, Paul A. (Ohio St. U.) COMBINATION SUBSTRATUM AND AUTOMATIC TRAP FOR NESTING MOURNING DOVES. Bird-Banding 25(1): 6-8, illus. Jan. 1954.
The trap is relatively simple, can be operated automatically or by pull-string, and does little if any harm to the birds. Doves nesting in traps were more successful than others. Nests built elsewhere can be moved artificially to the devices and parents trapped.

Wight, Howard. (Mo. Cons. Comm.) DOVES, BANDS AND FLYWAYS. Missouri Conservationist 15(3): 10-11, maps. March 1954.
Band returns (3 maps) show that dove migration has little or no relation to waterfowl flyways. Doves should be managed by dove flyways. These dove flyways should be worked out by the Fish & Wildlife Service and the states, and new regulations should be based on them.

Winston, Frank A. (Fla. Game Comm.) THE EFFECT OF HUNTING ON THE DOVE POPULATION. Presented at 7th An. Conf., SE Assn. of Game and Fish Commissioners, Chattanooga, Tenn., Oct. 11-14, 1953. 1-11 p.
From study of banding and harvest data, the author concludes that hunting under present regulations does not affect dove populations and that hunting comes at a time when natural mortality is extremely high. He recommends progressive relaxation of regulations while populations are watched carefully for effects. [Some of the author's assumptions and interpretations are not agreed to by all authorities.]

BIRDS--WATERFOWL

Anderson, John M. (Port Clinton, Ohio.) DUCK CLUBS FURNISH LIVING SPACE. Trans. 18th N. Amer. Wildl. Conf. 122-128 p. 1953.
Through habitat management the Winous Point Shooting Club has provided living space for ducks in a multiple use area that is cropped for muskrats and also used by student and other groups.--L. F. Stickel.

Anderson, Maurice, and Ray Murdy. (S. D. Dept. Game.) A COMPARISON OF METHODS OF ESTIMATING DUCK BROOD DENSITY. Presented at 15th Midwest Wildlife Conference, Chicago, Ill., Dec. 9-11, 1953. 1-9 p., graphs.
Methods tested in S. D. for determining number of broods per area were beat-out, road count, aerial circling, and aerial straight run. Beat-outs were considered most accurate and figures for them were used to judge figures from the other methods. So-called road counts included stops in which all broods immediately observable through binoculars were recorded. This method was next best to beat-outs. Aerial circling, the third best method, also involved counting all visible broods. Aerial straight runs were relatively poor. More broods were counted by the better methods and variation was less. Morning counts were a little better than evening counts. All methods worked best during middle of brood season.

Anderson, Roy C. (Ont. Research Found., Toronto.) ORNITHOFILARIA FALLISENSIS N. SP. (NEMATODA: FILARIOIDEA) FROM THE DOMESTIC DUCK WITH DESCRIPTIONS OF MICROFILARIAE IN WATERFOWL. Canadian Journal of Zoology 32(2): 125-137, illus. April 1954.

BIRDS--WATERFOWL--Continued

Bellrose, Frank C. (Ill. Nat. Hist. Survey, Havana, Ill.) A PRELIMINARY EVALUATION OF CRIPPLE LOSSES IN WATERFOWL. Trans. 18th N. Amer. Wildl. Conf. 337-359 p., illus. 1953.
Detailed analysis of waterfowl wounds. Hunter interviews, fluoroscopy, autopsy, and shooting experiments were used. It was found that about 60 out of 100 mallards flying south along the Mississippi Flyway will be hit by shot. Of those 32 will be bagged, 10 will escape crippled with only 1 or 2 recovering, 18 will be hit and suffer no apparent ill effects. Effective killing distances for different sizes of shot are discussed.--L. F. Stickel.

Bellrose, Frank C. (Ill. Nat. Hist. Survey, Urbana.) THE VALUE OF WATERFOWL REFUGES IN ILLINOIS. Journal of Wildlife Management 18(2): 160-169, maps. April 1954.
For abstract see WR 73:67. Desirable size and spacing of refuges on flyways are also discussed.

Cooch, Graham. (Dept. Cons., Cornell U.) A PRELIMINARY STUDY OF THE BLUE AND LESSER SNOW GEESE IN SOUTHAMPTON ISLAND. Arctic Circular 6(2): 14-17. 1953. [From Polar Record 7(47).]
"Author's work, 1952."

Dreis, Robert E. (Box 54, Black River Falls, Wis.) A FIELD OBSERVATION METHOD OF AGING BROODS OF WOOD DUCKS. Journal of Wildlife Management 18(2): 280-281. April 1954.
"...based on comparative size of adult hen and duckling and on duckling habits, which appear to be peculiar to given age classes."

Dresser, Cleveland van. WHAT'S HAPPENING TO OUR DUCKS? PART 2. DESERT MARSHES AND OLD MAN RIVER. Sports Afield 131(1): 46-51, illus. Jan. 1954.
Drainage for navigation and agriculture is ruining much of the Louisiana coastal marsh region for waterfowl. Fresh water is replaced by saline and desirable food plants disappear. Huge tracts of dry, worthless land sometimes result. Overgrazing and oil operations make the situation worse. This interesting article tells how bad and how extensive injury has been, with discussions of specific areas. Some of the major waterfowl refuges are seriously affected. Long dikes and costly locks may be the only solutions to drainage problems, but properly managed grazing can be beneficial to waterfowl in many areas, and experience has shown that oil developments can be handled by cooperative agreements with practically no harm to wildlife. As yet, however, prospects for rehabilitation of large areas are slim and the drainage problem will be hard to solve.

Dresser, Cleveland van. WHAT'S HAPPENING TO OUR DUCKS? PART 3. THEY'RE CREATING A NEW FLYWAY. Sports Afield 131(2): 71-74, illus. Feb. 1954.
Popular account of the refuges that have made the TVA region a major waterfowl area. Water fluctuations prohibit use of marsh and aquatic plants, so food plants are farmed. Local farmers and livestock men share the work and the crops. Geese, mallards, and black ducks are aided greatly, but not the divers. Despite the success and multiple use of these refuges, they are threatened by those who wish to commercialize or suburbanize them, and part of Kentucky Woodlands is menaced by a proposed dam of the Army Engineers.

Dresser, Cleveland van. WHAT'S HAPPENING TO OUR DUCKS? PART 4. Sports Afield 131(3): 90-93, illus. March 1954.
Reelfoot Lake is silting up so rapidly that it is little more than half its original size. The silt comes from eroding fields, owners of which refuse to take remedial action and continue to plow up and down hill. The author suggests condemning these lands and putting them to grass or trees. Waterfowl management at Reelfoot Lake and Lake Isom federal refuges is described briefly. The second section of Part 4 concerns the White River bottomlands of Arkansas, which are important waterfowl areas and contain the 110,000-acre White River Refuge. A series of completed dams on the White River and proposed drainage by straightening of the Cache River make the future of the bottomlands uncertain and make present refuge management difficult.

BIRDS--WATERFOWL--Continued

Dresser, Cleveland van. WHAT'S HAPPENING TO OUR DUCKS? PART 5. WATERFOWL PARADISE BY ACCIDENT. Sports Afield 131(4): 96, 98-102, illus. April 1954.
Account of the huge Upper Mississippi River Refuge. Dams installed by the Army Engineers for navigation have created large pools of stabilized water level and huge marsh areas that abound in duck foods. 200,000 acres are federally owned and are managed by the Fish & Wildlife Service, with 75% of the area open to hunting. Waterfowl and other wildlife use the area heavily. Hunting pressure has increased to the problem point.

Dresser, Cleveland van. WHAT'S HAPPENING TO OUR DUCKS? PART 6. NEW NESTING ADDRESS: U. S. A. Sports Afield 131(5): 96, 98-101, illus. May 1954.
Devoted to Horicon (Wis.) and Seney (Mich.) refuges. Tells how these refuges were developed, how duck, muskrat, and other wildlife populations have built up, and how goose nesting has been increased gradually from a start with pinioned birds. Hunting arrangements and results at Horicon are described.

Dushinske, R. L. (Devil's Lake, N. D.) DRAINAGE AND SUBSIDY PAYMENTS. Trans. 18th N. Amer. Wildl. Conf. 73-80 p. 1953.
Forceful review of drainage problem, with many facts and examples. Waterfowl habitat is being lost at an alarmingly increased rate. Subsidies for drainage should be stopped.

East, Ben. THE TRUTH ABOUT CAIRO. Outdoor Life 113(3): 33-35, 118-122, illus. March 1954.
Latest report on goose situation at Horseshoe Lake, Ill., with facts and figures on size of flock, kill, cripple loss, management system, and hunting. Arrangements are better than they were, with more refuges in the region and elimination of the firing line. It should be possible to harvest many thousands of geese each fall without hurting flock. But in 1953 the flight was lighter than expected and shooting was not stopped when 20% of the population was shot, as had been agreed. Instead, 41,550 geese were killed or crippled and only 90,000 were left, which is considered a far from safe ratio. The author believes that political pressure was responsible. Hunting is extremely heavy all around the refuge and hunters spend perhaps $4 or $5 million in the county in a good year. Early closure would cost local business hundreds of thousands, so pressure to continue shooting is inevitable, regardless of the effect on goose populations of the flyway.

Fallis, A. M., J. C. Pearson, and G. F. Bennett. (Ont. Research Found., Toronto.) ON THE SPECIFICITY OF LEUCOCYTOZOON. Canadian Journal of Zoology 32(2): 120-124. April 1954.
L. simondi of waterfowl was not transferable to galliform birds. There are indications also of the specificity of L. sakharoffi.

Fallis, A. Murray, D. M. Davies, and Marjorie A. Vickers. (Ont. Res. Foundation, Toronto.) LIFE HISTORY OF LEUCOCYTOZOON SIMONDI MATHIS AND LEGER IN NATURAL AND EXPERIMENTAL INFECTIONS AND BLOOD CHANGES PRODUCED IN THE AVIAN HOST. Canadian Journal of Zoology 29(6): 305-328, illus. Dec. 1951.
Detailed report on experiments with ducks and black flies.

Fashingbauer, Bernard A. (N. D. Game Dept.) THE BEST SEASON WE NEVER HAD. North Dakota Outdoors 16(9): 8-9. March 1954.
Report on 1953 waterfowl season in N. D.: number bagged, species composition, kill during parts of season, age and sex ratios (66% young, 54% males), numbers and kinds of geese shot.

BIRDS--WATERFOWL--Continued

Foley, Donald. (N. Y. Cons. Dept.) STUDIES ON SURVIVAL OF THREE STRAINS OF MALLARD DUCKLINGS IN NEW YORK STATE. New York Fish and Game Journal 1(1): 75-83. Jan. 1954.

The 3 strains were wild Canadian, N. Y. game farm, and crosses between them. 811 ducklings about 5 weeks old were released on many marshes in 1952. Survival was nearly as good for 1 strain as another, but the Canadians were warier and were able to fly a week to 10 days earlier than others. Known predation accounted for 5.1%, with leading predators being raccoon and fox. Turtle predation could not be assessed well. Survival did not vary with type of area, type of marker, etc., except that survival was best where usable escape cover was plentiful and was not made unavailable by drought. Species of plant providing escape cover was not important. Survival to flying age averaged about 61% for all areas, and about 72% where all 3 strains were released together.

Gabrielson, Ira N. (Wildl. Mgt. Inst., Wash., D. C.) ALASKAN WATERFOWL AND THEIR MANAGEMENT. In Science in Alaska, Selected Papers of the Alaskan Science Conference, Nov. 1950. Arctic Institute of North America, Special Publication no. 1. 292-305 p. June 1952.

Relatively detailed description of breeding distribution and importance of Alaskan waterfowl. Instances of severe, recent depletion are cited. It is already known that certain important areas should be reserved for waterfowl. This is necessary for the sake of natives' food supply and for preservation of southward flights. Some less known areas should be carefully surveyed to determine their importance and to find if they too should be reserved. Shooting and other uses could go on in these reserves, but habitat and populations would be preserved. Inventories and banding should be expanded as rapidly as possible to determine populations and migration routes. Waterfowl research at University of Alaska should be stimulated. Law enforcement should be expanded to give adequate protection. Alaska has the most important waterfowl breeding grounds remaining under U. S. jurisdiction. Action to safeguard this resource is urgently needed.

Gavin, Angus. (Ducks Unlimited, Winnipeg, Man.) AGRICULTURE REACHES NORTHWARD IN CANADA. Trans. 18th N. Amer. Wildl. Conf. 118-121 p. 1953.

Expanding agriculture is destroying waterfowl habitat. A development program is urged to provide larger water areas for breeding and smaller, deeper areas for salvage in drought periods.--L. F. Stickel.

Hagar, Joseph A. (Pleasant St., Marshfield Hills, Mass.) NORTHEASTERN FLYWAY / A PROPOSAL FOR MORE EFFECTIVE WATERFOWL MANAGEMENT IN THE NEW ENGLAND COASTAL STATES AND LONG ISLAND. Massachusetts Division of Fisheries and Game. 1-28 p., maps and graphs. Jan. 1954.

An important and persuasive document that has stimulated much discussion. The author presents detailed analyses of banding data (chiefly for black duck), with several maps. He states: "A comparison of northeastern stocks of game ducks with middle and south Atlantic stocks shows radical differences in species-composition and source. Even the Black Ducks of the Atlantic Flyway, on the score of habits and distribution, are separable into maritime and inland populations. The dominance of the Black Duck in the Northeast modifies the whole basis of management for the New England states. A division of the Flyway, without causing substantial harm to its remaining parts, will clear the way for effective management in the Northeast." A sharp distinction is made between measures necessary for management of the fluctuating populations of prairie ducks, and those necessary for management of the stable populations of the Northeast. Regulations to be sought for the proposed new flyway are not itemized, but among the stated aims are elimination of penalty for split seasons and greater constancy of regulations.

Handley, Delmar. HOW MANY DUCKS NEST IN OHIO? Ohio Conservation Bulletin 18(4): 18, 31. April 1954.

Estimates of numbers of breeders and numbers produced.

BIRDS--WATERFOWL--Continued

Hooper, David C. WATERFOWL NESTING AT MINTO LAKES. In Science in Alaska 1951, Proceedings 2nd Alaskan Science Conference, Alaska Div. AAAS. 318-321 p. [1953.]
These lakes are 32 miles west of Fairbanks. The paper describes the area, records numbers of nests of various species, and discusses nesting success and causes for failures. The worst egg predator seemed to be the short-billed gull (Larus canus).

Hunt, George S., and Howard E. Ewing. (Mich. Dept. Cons.) INDUSTRIAL POLLUTION AND MICHIGAN WATERFOWL. Trans. 18th N. Amer. Wildl. Conf. 360-368 p. 1953.
Heavy losses among waterfowl wintering on the Detroit River in 1948 were due to lack of food as a result of ice cover, direct mortality owing to oil or phosphorus pollutants or combinations of the two.--L. F. Stickel.

Jahn, L. R., Lloyd Gunther, and J. G. Bell. (Wis. Cons. Dept.) THE MANAGED GOOSE HUNT--HORICON MARSH, 1953. Wisconsin Conservation Bulletin 19(3): 6-11, illus. March 1954.
Hunting on the federal part of Horicon Marsh has been strongly opposed by some groups. This article tells why and how the hunting was arranged. The goose population of the Mississippi Flyway was the highest for many years. Geese on Horicon had increased from 250 in 1946 to 30,000 in 1953. Crop depredations were increasingly troublesome. Hunters crowded roadways near refuges, with conflicts between them inevitable. Public hunting areas were badly needed, but private lands could be neither leased nor bought for the purpose. Consequently, a strip of upland comprising about 2% of the refuge was opened for public shooting. A total of 114 blinds and pits was provided. No hunter was allowed more than 2 geese. The season would be closed if 15% of the average peak population was shot. Actually, only about 2,000 geese were killed on or near the refuge in 1953. On the refuge hunting unit, kill was 607 Canada geese, 48 other geese, and 1,717 ducks. Hunters using the unit came from 345 Wis. cities and 10 states.

Kimball, James W. (US F&WS, 1006 W. Lake St., Minneapolis, Minn.) WISE LAND USE WILL SAVE THE POTHOLES. Presented at 15th Midwest Wildlife Conference, Chicago, Ill., Dec. 9-11, 1953. 1-8 p.
Half to 2/3 of the waterfowl productivity of the prairie pothole region has been lost through drainage, and drainage is going on at least as rapidly as ever, with 32,000 potholes lost each year. The region still produces about 5 million ducks a year and this productivity should be saved. Four years of study proved that large potholes that held water much of the year had huge duck production--but only because broods came to them from as much as 2½ miles from temporary potholes where space requirements for pairing and nesting were met. Potholes form a production complex and temporary ones cannot be sacrificed. Little can be done where level areas of deep, fertile soil justify drainage. But much of the remaining pothole country consists of barren, eroded hills that should be put into grass, according to experts. "The rolling land produces excellent grass and hay and the potholes provide water for the cattle and homes for the ducks." The shift to grass should be encouraged and it should be done before the soil fertility is lost. Land, farmers, and ducks would benefit.

Lee, Forrest B. (Minn. Div. Game.) THE BANDED DUCK--INFORMER OF THE FLYWAYS. Minnesota Naturalist 4(3): 39-43, maps. March 1954.
Includes summary of results of duck banding in Minn. Six maps help provide details of migration and recovery records, especially for blue-winged teal, mallard, redhead, and ringneck. Returns are available for 12.8% of the 2,149 ducks banded in the 5 years beginning 1948. Over half were shot in Minn., 82% in the Mississippi Flyway, and 10% in the Central Flyway. Of 123 flightless young recovered, 67% were shot in Minn. Only 6.5% of all blue-winged teal banded were recovered, but 86% of these were shot in Minn. "It appears that Minnesota hunters take a rather substantial part of the harvest of ducks produced in the state."

BIRDS--WATERFOWL--Continued

Lee, James A. (N. H. Game Dept.) RECENT STUDIES ON THE FALL MIGRATION OF BLACK DUCKS IN NEW HAMPSHIRE. New Hampshire Fish and Game Department. 1-6 p. + 1 map, 4 graphs. Feb. 1954.

Results of 3-year aerial inventory, 1950-52. A major peak for all inland regions of state, except northernmost, occurs in first half of Oct. and probably is composed largely of resident ducks. A major peak in the northern region is in last half of Sept. A secondary inland build-up begins in late Oct. but usually is interfered with by freezing of water areas. Inland gunning is done chiefly on resident birds and causes sharp drop in numbers. Concentrations along coast reach peak in late Nov. or early Dec. Gunning on coast is on a growing concentration and causes no drop-off. Any system of zoned hunting must take account of differences between coastal and inland regions of state.

Levine, Norman D. (U. Ill.) EIMERIA MAGNALABIA AND TYZZERIA SP. (PROTOZOA: EIMERIIDAE) FROM THE CANADA GOOSE. Cornell Veterinarian 42(2): 247-252, illus. April 1952.

Description and incidence in 48 droppings; Illinois.

Linduska, Joseph P. (US F&WS.) A BROADER WATERFOWL MANAGEMENT PROGRAM. Trans. 18th N. Amer. Wildl. Conf. 136-143 p. 1953.

Discussion of organization and objectives of the Branch of Game Management of the U. S. Fish and Wildlife Service.--L. F. Stickel.

Mair, W. Winston. (Canadian Wildl. Service, Ottawa.) DUCKS AND GRAIN. Trans. 18th N. Amer. Wildl. Conf. 111-116 p. 1953.

Crop damage by waterfowl has become increasingly serious in Canada's Prairie Provinces. Waterfowl management studies and public education are urged to secure cooperation by sportsmen and farmers.--L. F. Stickel.

Miller, A. W., and B. D. Collins. (Calif. Dept. Game.) A NESTING STUDY OF DUCKS AND COOTS ON TULE LAKE AND LOWER KLAMATH NATIONAL WILDLIFE REFUGES. California Fish and Game 40(1): 17-37, maps and graphs. Jan. 1954.

Report of 1952 study of 11 sample plots totalling 1,820 acres. 826 duck nests and 154 coot nests were found. Much information is given by tables and text on fate of nests, clutch size, fate of broods from hatching to 9 weeks, date of hatching, nest sites and cover types. Species studied were mallard, gadwall, pintail, cinnamon teal, shoveller, redhead, ruddy, lesser scaup, and coot. Duck nesting success was 83.4%; coot, 94.6%. Major causes of nest failures were desertion, flooding, and predation. Hatching success in successful nests was 91.6% for ducks, 97.6% for coots. The major reduction of broods was in first week, with relative stability afterward. Nesting season lasted about 150 days, with peak from June 22 to July 1. 92% of all nests were within 50 yards of water.

Musgrove, Jack W. and Mary R. WATERFOWL IN IOWA. Iowa Conservation Commission. 132 p., illus. Published 1943, revised 1947, republished 1953. $1.00.

Useful handbook on identification and habits, with sections on migration, banding, etc. Well illustrated in color and black and white by Maynard F. Reece. For further description of this book, see WR 38:43, and WR 58:35.

Naylor, A. E., and E. G. Hunt. (Calif. Dept. Game.) A NESTING STUDY AND POPULATION SURVEY OF CANADA GEESE ON THE SUSAN RIVER, LASSEN COUNTY, CALIFORNIA. California Fish and Game 40(1): 5-16, illus. Jan. 1954.

Authors' summary (numerical headings deleted): "A study of population and nesting Canada geese was completed on the Susan River and Honey Lake Refuge in 1952. Nesting density along the 16 miles of the river was 3.6 nests per mile. Preferred nesting sites were ditchbanks. Nesting was delayed almost a month by weather conditions. Nesting success on the Susan River was 79.3 percent successful and 64.9 percent for Honey Lake Refuge. Nest destruction was the

BIRDS--WATERFOWL--Continued

major cause of unsuccessful nests on both areas. The population of the Susan River during nesting season was approximately 1,100 to 1,300. It was concluded that the Susan River was primarily a nonbreeding area and secondarily a nesting area."

Olds, Hayden W., and Ernest Swift. (Tenn. Game Comm.) ROLE OF THE STATES IN WATERFOWL MANAGEMENT. Trans. 18th N. Amer. Wildl. Conf. 129-134 p. 1953.
Problems in waterfowl management and how the flyway councils can attack them through coordinated research and development.

Rosen, Merton N., and Arthur L. Bischoff. (Calif. Dept. Game.) A NEW APPROACH TOWARD BOTULISM CONTROL. Trans. 18th N. Amer. Wildl. Conf. 191-197 p. 1953.
Botulism loss at Tulare Lake in 1952 was reduced greatly by getting ducks away from danger areas by herding and by feeding elsewhere, augmented by pumping operations.--L. F. Stickel.

Schierbaum, Donald, and Everett Talmage. (N. Y. Cons. Dept.) A SUCCESSFUL DIVING DUCK TRAP. New York Fish and Game Journal 1(1): 116-117, illus. Jan. 1954.
Built from 1 x 2-in. mesh fencing 4 ft. high. Sides are 6 ft. long and joined by hog rings. Top is of same material and is attached to 3 sides by rings. Top is attached to 4th side by wire rod passed through rings. Rod is pulled out to let operator remove ducks with landing net. Entrance is made by cutting from front of trap a panel 6 in. wide and 28 in. high. This gap is left open. Trap is set in 2½-3 ft. of water near good duck feeding area and is heavily baited with grain. Grain trail is run from entrance to feeding area. Trail may vary in length from 75 ft. to ¼ mile. After ducks learn to feed near-by, short line suffices. Ducks should be removed at least twice a day or they become exhausted by efforts to escape. Few manage to find their way out, however.

Spencer, Howard E., Jr. THE CINNAMON TEAL (ANAS CYANOPTERA VIEILLOT): ITS LIFE HISTORY, ECOLOGY AND MANAGEMENT. M. S. thesis, Utah State Agricultural College. 184 p. 1953.

U. S. Fish and Wildlife Service and Canadian Wildlife Service. WATERFOWL POPULATIONS AND BREEDING CONDITIONS - SUMMER 1953. U. S. Fish and Wildlife Service, Special Scientific Report - Wildlife no. 25. 1-250 p., maps and graphs. April 1954.
Consists of 40 separate reports on breeding conditions and production and factors affecting them in various areas. Each report is summarized. The volume should be useful to all concerned with waterfowl population problems, and should be illuminating to those who wonder what sort of data regulations are based on.

Webster, Clark G. (Patuxent Refuge, Laurel, Md.) NEST BOXES FOR WOOD DUCKS. U. S. Fish & Wildlife Service, Wildlife Leaflet 351. 1-9 p., illus. Feb. 1954.
Discusses briefly: (1) construction of new types of boxes that are proving successful in reducing nest predation, and (2) some of the more practical and successful methods of locating and erecting boxes. Recommendations are based on findings of various investigators. New types of construction are illustrated by photographs.--C. G. Webster.

Wehr, Everett E., and Carlton M. Herman. (USDA, Beltsville, Md.) AGE AS A FACTOR IN ACQUISITION OF PARASITES BY CANADA GEESE. Journal of Wildlife Management 18(2): 239-247. April 1954.
Summary: "Examination of 46 Canada goose goslings yielded 14 species of parasites including five Protozoa, four Nematoda, two Cestoda, and three Trematoda. Evidence indicates that goslings acquired most of these infections during their first week of life. Some parasites, Prosthogonimus sp., occurred

BIRDS--WATERFOWL--Continued

only in younger birds. Others, Leucocytozoon simondi, were evident only during the initial course of infection, while still others remained evident in older geese. Parasites with a direct life cycle appeared to be more prevalent than those requiring intermediate hosts. Among 29 birds from a refuge in Michigan, 14 species of parasites were found; while in 17 goslings from a Utah refuge, only five species occurred."

Wooten, William H. (US F&WS, Eureka, Calif.) WATERFOWL LOSSES IN THE SURF ALONG THE NORTHERN CALIFORNIA COAST. Journal of Wildlife Management 18(1): 140-141. Jan. 1954.

Waterfowl, especially surface-feeding ducks, drift into the surf and are so pounded about that many suffer internal injuries (viscera forced to the rear) and most become helpless, loaded to the skin with sand and water. Few survive unless transferred to fresh-water ponds. Losses are greatest during hunting season, when birds seek refuge at sea. "During the 2-month interval of this study it is likely that from 6,000 to 9,000 birds perished along 25 miles of beaches."

BIRDS--CRANES, RAILS, SHOREBIRDS

Aldrich, John W., and others. INVESTIGATIONS OF WOODCOCK, SNIPE, AND RAILS IN 1953. U. S. Fish & Wildlife Service, Special Scientific Report: Wildlife no. 24. 1-68 p., maps and graphs. Jan. 1954.

A set of 13 short papers reporting on current surveys and studies. Titles and authors are: Summary of 1953 Woodcock, Snipe, and Rail Investigations, by John W. Aldrich. Wintering Woodcock Populations in West-Central Louisiana, 1952-53, by Vincent H. Reid and Phil Goodrum. Observations of Woodcock Breeding in Certain Southeastern States, by Vincent H. Reid and Phil Goodrum. Woodcock Singing Counts, Eastern Canada, 1953, by Victor E. F. Solman. Woodcock Census Studies in Northeastern United States, 1953, by Howard L. Mendall. Woodcock Singing Ground Counts in Central-Eastern United States, 1953, by P. F. English. Woodcock Breeding Ground Counts in Central-Northern United States, 1953, by John W. Aldrich. Summary of Massachusetts Woodcock Studies, 1953, by William G. Sheldon. Investigations on Woodcock in Michigan, by Lytle H. Blankenship. Wilson's Snipe Wintering Ground Studies, 1952-53, by Chandler S. Robbins. Wilson's Snipe "Winnowing" Counts in Eastern Canada, 1953, by Victor E. F. Solman. Further Investigations on Winnowing Method of Measuring Wilson's Snipe Populations, by Chandler S. Robbins. Wilson's Snipe and Sora Rail in Yampa River Valley, Colorado, by Hal M. Boeker.

Allen, Robert P. (Tavernier, Fla.) ADDITIONAL DATA ON THE FOOD OF THE WHOOPING CRANE. Auk 71(2): 198. April 1954.

Boeker, Hal M. (Wildl. Res. Unit, Colo. A & M Coll.) A CENSUS OF POPULATIONS OF THE WILSON SNIPE AND SORA RAIL IN THE YAMPA RIVER VALLEY, COLORADO. Condor 56(2): 105-106. March-April 1954.

Censuses made on 10 study areas in spring and summer of 1953. Breeding populations were estimated as 200 snipe and 120 rails.

Critcher, T. Stuart, and T. L. Quay. THE AMERICAN WOODCOCK IN NORTH CAROLINA. The Chat 17(3): 62-68, illus. Sept. 1953.

Breeding records are summarized from the literature, and those of censuses of 1950-53 are itemized.

Glasgow, Leslie L. (La. St. U.) THE AMERICAN WOODCOCK (PHILOHELA MINOR) IN LOUISIANA. Presented at 7th An. Conf., SE Assn. of Game and Fish Commissioners, Chattanooga, Tenn., Oct. 11-14, 1953. 1-16 p.

Topics discussed in some detail include: migratory behavior in state, habitats used, nocturnal feeding sites and behavior in relation to them, how to capture by eye-shining and netting, banding records (2809 woodcock banded), returns from

BIRDS--CRANES, RAILS, SHOREBIRDS--Continued

banding, and observed sex ratio. Banded birds apparently fan out to nearly all parts of the breeding range. Some habitat is being restored by reforestation, but better habitat is being lost through drainage and farming of swamps. "In the not too distant future practically every swamp which can be drained will have vanished." [Underlining ours.]

Harmon, William Z. NOTES ON CRANES. Florida Naturalist 27(1): 22. Jan. 1954.
The great trend toward pastures in Fla. is providing the sandhill crane with needed protection and new ranges for feeding and breeding.

Kiel, William H., Jr., and Arthur S. Hawkins (U. Wis.) STATUS OF THE COOT IN THE MISSISSIPPI FLYWAY. Trans. 18th N. Amer. Wildl. Conf. 311-321 p. 1953.
In three hunting seasons, 1949-1951, only the mallard ranked above the coot in number of waterfowl bagged in the Mississippi Flyway. In Manitoba in 1952 the breeding population declined over 40% from the 1951 level. Coots on a study area in southwestern Manitoba declined 62% since 1949, although 97% of 380 nests hatched successfully. There is no evidence that coots compete importantly with ducks.--L. F. Stickel.

Kozicky, E. L., T. A. Bancroft, and P. G. Homeyer. (Iowa St. Coll.) AN ANALYSIS OF WOODCOCK SINGING GROUND COUNTS, 1948-1952. Journal of Wildlife Management 18(2): 259-266. April 1954.
Statistical analysis was applied to data of the cooperative, annual woodcock studies. The aim was to determine whether population trends could be shown. Results were conflicting and inconclusive because of the nature of the data. Suggestions are made for new approaches to census work that will make satisfactory statistical interpretation possible. [Another example of the truism that statistical planning and methods research should be done in advance, not after years of data gathering.]

Sheldon, William G. (U. Mass.) WOODCOCK STUDIES IN MASSACHUSETTS. Trans. 18th N. Amer. Wildl. Conf. 369-377 p., graph. 1953.
Currently used census methods were examined by field tests. Recommendations are made for reducing variability and standardizing results. See also lengthy comments by J. J. Hickey in Auk 71(2): 229.

Stewart, Robert E. (Patuxent Refuge, Laurel, Md.) MIGRATORY MOVEMENTS OF THE NORTHERN CLAPPER RAIL. Bird-Banding 25(1): 1-5, maps. Jan. 1954.
1028 clapper rails were banded in Eastern Shore Virginia, 1933-52. Forty-six were later recovered. Some were taken in near-by parts of the Eastern Shore. Others were taken in a narrow coastal strip from southeastern N. C. to northern Fla. This strip appears to be an important wintering ground. Travel from breeding to wintering areas may be rapid. Fall migration begins during late Aug. and early Sept. Annual turnover is high, with only 1 of 198 rails banded in 1950 being recaptured in the same area in 1951.

Ward, Peter. (Delta, Man.) THE AMERICAN COOT AS A GAME BIRD. Trans. 18th N. Amer. Wildl. Conf. 322-327 p. 1953.
Life history, behavior and migration periods of the coot at Delta Research Station are summarized. Recent problems with increase of coot harvests are discussed.--L. F. Stickel.

OTHER BIRDS

Adams, Charles S. HUNTING CROWS YEAR ROUND. Macmillan Co., N. Y. 101 p. 1953. $2.95. [From review in Wisconsin Conservation Bulletin 19(3).]
"...succeeds in putting the crow in the game bird class... The author explains all of the best, and most successful, methods of hunting this elusive bird. Clear, informative drawings and photographs by the author illustrate these methods."

OTHER BIRDS--Continued

Allen, Robert P. (Tavernier, Fla.) A REPORT ON THE FLAMINGO. Audubon Magazine 56(1): 24-28, 47, illus. Jan.-Feb. 1954.
Flamingo colonies in the Americas are growing fewer and less safe. Reasons are often clear: raids by natives, disturbance by planes, etc. This paper tells of present status and nesting success of various colonies, and of the amount of protection that has been arranged for them. Response has been good where protection has been firm.

Baldwin, Paul H. ANNUAL CYCLE, ENVIRONMENT AND EVOLUTION IN THE HAWAIIAN HONEYCREEPERS (AVES: DREPANIIDAE). University of California Publications in Zoology 52: 285-398, illus. Oct. 1953. $1.50. [From long review by Dean Amadon, Auk 71(2).]

Barnes, Irston R. (Box 202, Benj. Franklin Sta., Wash. 4, D. C.) THE SNOWY OWL AND THE CRUMBLING PYRAMID. American Forests 60(4): 19, 44-45, illus. April 1954.
Tells of the periodic flights of snowy owls into the U. S. and how these are dependent on cyclic lows of lemming populations in the North. Number of eggs laid and number of young reared depend on abundance of lemmings. When lemmings crash, other food animals are used while they suffice, and when starvation appears the southward flights begin.

Boyd, Elizabeth M., and Joan Shriner. (Mt. Holyoke Coll.) NESTING AND FOOD OF THE BARN OWL (TYTO ALBA) IN HAMPSHIRE COUNTY, MASSACHUSETTS. Auk 71(2): 199-210. April 1954.
Microtus, shrews, and moles predominated.

Cade, Tom. THE PEREGRINE FALCON IN THE YUKON VALLEY. In Science in Alaska 1951, Proceedings 2nd Alaskan Science Conference, Alaska Div. AAAS. 330-334 p. [1953.]
Population estimates with review of estimates made in other regions.

Carnie, S. Kent. (MVZ., U. Calif. at Berkeley.) FOOD HABITS OF NESTING GOLDEN EAGLES IN THE COAST RANGES OF CALIFORNIA. Condor 56(1): 3-12, illus. Jan.-Feb. 1954.
Studies on 17 pairs, 1947-1952. Hunting methods and foods of young and adults are discussed. Eagles of the region "bring to their young a wide variety of food items, dominated, however, by ground squirrels and jackrabbits. Blacktailed deer, mostly fawns, were extensively utilized by some pairs. Mammals collectively made up 77.3 per cent of the diet. Among the birds, which constituted 1.5 per cent of the diet, the Yellow-billed Magpie was the principal prey. A few snakes and fish completed the list of items found in the nests." Deer of the region were suffering overpopulation and predation on them was judged beneficial.

Johnson, Ned K. (U. Nevada Mus. of Biol., Reno.) FOOD OF THE LONGEARED OWL IN SOUTHERN WASHOE COUNTY, NEVADA. Condor 56(1): 52. Jan.-Feb. 1954.
Report on contents of 131 pellets.

Miller, Alden H. (MVZ, U. Calif. at Berkeley.) THE CASE AGAINST TRAPPING CALIFORNIA CONDORS. Audubon Magazine 55(6): 261-262. Nov.-Dec. 1953.
Dr. Miller makes a strong case against attempting to trap condors for breeding in captivity.

Tordoff, Harrison B. (Mus. Nat. Hist., U. Kans.) A SYSTEMATIC STUDY OF THE AVIAN FAMILY FRINGILLIDAE BASED ON THE STRUCTURE OF THE SKULL. University of Michigan, Museum of Zoology, Miscellaneous Publications no. 81. 1-42 p. + 10 pl. of 77 figs. April 1954. 75¢.
The author's conclusions, here presented in detail, are based primarily on squamosal and palatine regions. For abstract, see WR 69:42. Unfortunately, the various recent studies of passerine classification are not in good agreement.

OTHER BIRDS--Continued

Tordoff, Harrison B. (U. Kans.) AN AUTOMATIC LIVE-TRAP FOR RAPTORIAL BIRDS. Journal of Wildlife Management 18(2): 281-284, illus. April 1954.
Description and mechanical drawings of relatively simple, spring-operated trap that is baited with living mouse or sparrow. The landing hawk or owl releases a trigger and a net snaps up and over the bird. The trap can be made in various sizes. It readily captures many species, including shrikes. It is intended chiefly for banding work.

REPTILES AND AMPHIBIANS

Allen, Ross, and Wilfred T. Neill. (Reptile Inst., Silver Springs, Fla.) BULLFROGS OF FLORIDA. Florida Wildlife 7(10): 20-21, 40, illus. March 1954.
Since the Fla. Dept. Agriculture has published a most unfortunate booklet advocating frog farming (see WR 71:48), it is interesting to see what these 2 Fla. experts on herpetology have to say on the subject. "At the Reptile Institute we receive many letters beginning this way: 'How can I start out raising bullfrogs? I hear there's lots of money in it.' Our advice is, 'Don't.' ...We know scores of people who took up frog-farming; they all abandoned it in disgust after considerable loss of time and money." The bulk of this paper is devoted to telling about the kinds of bullfrogs in Fla., and why frog farming does not work.

Author? THE BULLFROG, RANA CATESBEIANA SHAW, IN JAPAN. Fisheries Agency, Japan. 1-71 p., illus. No date. [Probably 1952 or 1953.]
In Japanese with 3-page English summary. Substantial and informative paper on ecology, life history, and conservation in the wild. Many tables. [Copy seen is in Dept. Interior Library, Washington, D. C. Can be borrowed on interlibrary loan.]

Blair, W. Frank, and David Pettus. (U. Texas.) THE MATING CALL AND ITS SIGNIFICANCE IN THE COLORADO RIVER TOAD (BUFO ALVARIUS GIRARD). Texas Journal of Science 6(1): 72-77, illus. March 1954.
The call is weak, has little if any importance in reproduction, and perhaps is being lost.

Bonn, Edward W., and W. H. McCarley. (Texas Game Comm.) THE AMPHIBIANS AND REPTILES OF THE LAKE TEXOMA AREA. Texas Journal of Science 5(4): 465-471, map. Dec. 1953.

Bragg, Arthur N. (U. Okla.) A STUDY OF RANA AREOLATA IN OKLAHOMA. Wasmann Journal of Biology 11(3): 273-318, illus. Fall 1953.
Distribution and subspecies in state, variation, ecology of breeding sites, breeding period, breeding behavior and calls, eggs and egg masses, behavior and growth of tadpoles, and description of tadpoles.

Cagle, Fred R. (Tulane U.) THE STATUS OF THE TURTLE GRAPTEMYS OCULIFERA (BAUR). Zoologica 38, pt. 3, no. 10: 137-144, illus. Nov. 1953.
Characteristics, range, habitat, growth, breeding, food.

Camin, J. H., C. A. Triplehorn, and H. J. Walter. (Chi. Acad. Sci.) SOME INDICATIONS OF SURVIVAL VALUE IN THE TYPE "A" PATTERN OF THE ISLAND WATER SNAKES OF LAKE ERIE. Chicago Academy of Sciences, Natural History Miscellanea no. 131. 1-3 p. March 1954.

Chaney, Allan H., and Robert E. Gordon. (Tulane U.) NOTES ON A POPULATION OF SCELOPORUS MERRIAMI MERRIAMI STEJNEGER. Texas Journal of Science 6(1): 78-82, graphs. March 1953.
Based on observations and collections at Pecos River Canyon, Texas. Treats habitat, habits, variation, size at sexual maturity, and foods.

REPTILES AND AMPHIBIANS--Continued

Duellman, William E. (Mus. Zool., U. Mich.) THE SALAMANDER PLETHODON RICHMONDI IN SOUTHWESTERN OHIO. Copeia 1954(1): 40-45, graph. Feb. 1954.
Habitats, habits, foods, eggs, young, variation.

Duellman, William E., and John T. Wood. (Mus. Zool., U. Mich.) SIZE AND GROWTH OF THE TWO-LINED SALAMANDER, EURYCEA BISLINEATA RIVICOLA. Copeia 1954(2): 92-96, graphs. May 1954.

Endsley, J. R. (Abilene Christian Coll.) ANNOTATED LISTING OF A HERPETOLOGICAL COLLECTION MAINLY FROM TENNESSEE. Report of the Reelfoot Lake Biological Station 18: 36-41. Jan. 1954. [Same as J. Tenn. Acad. Sci. 29(1).]
Most specimens from Chester Co., Tenn.

Fantham, H. B. (deceased) and Annie Porter. (Zool. Soc. London.) THE ENDOPARASITES OF SOME NORTH AMERICAN SNAKES AND THEIR EFFECTS ON THE OPHIDIA. Proceedings of the Zoological Society of London 123(4): 867-898 + 2 pl. Feb. 1954.
Discusses protozoans, with descriptions of some new species, as well as other endoparasites, and also takes up pathology, factors in parasitism, and difficulties in treatment.

Goodman, John D. (U. of Redlands.) FURTHER EVIDENCE OF THE VENOMOUS NATURE OF THE SALIVA OF HYPSIGLENA OCHRORHYNCHA. Herpetologica 9(4): 174-176. Dec. 1953.

Hamilton, W. J., Jr. (Cornell U.) THE ECONOMIC STATUS OF THE TOAD. Herpetologica 10(1): 37-40. April 1954.
Reviews literature on subject and presents results of study of stomach contents of toads from N. Y. and Fla. The study "fails to substantiate the claim that toads are a marked asset to man. By their destruction of useful carabids, coccinelids, staphylinids, spiders, phalangids and other beneficial arthropods, they may well offset any reputed value which might accrue through eating insect pests. The toad, like birds, insectivorous mammals and other vertebrates which destroy insects, provides a minor regulating influence on the total number of insects. Toads fill an ecological niche, perhaps limiting in small measure the nocturnal ground dwelling invertebrates. One should recognize that biological control, insofar as the toad is concerned, is of relatively minor significance in regulating the undue increase of insect pests. Presently the toad plays an even lesser role with the advent of many new insecticides." "To place a specific monetary value on any animal which may aid man in the control of insect pests is ridiculous."

Howell, Thelma. (Wesleyan Coll., Macon, Ga.) METHODS OF COUNTING COSTAL GROOVES IN SALAMANDERS. Report of the Reelfoot Lake Biological Station 18: 42-44, illus. Jan. 1954. [Same as J. Tenn. Acad. Sci. 29(1).]
"...considerable confusion would be eliminated if the method of maximum count were used and if investigators would record the data as having been determined by that method."

Howell, Thelma, and Ann Hawkins. (Dept. Biol., Wesleyan Coll., Macon, Ga.) VARIATION IN TOPOTYPES OF THE SALAMANDER PLETHODON JORDANI MELAVENTRIS. Copeia 1954(1): 32-36, graphs. Feb. 1954.
Includes data on sexual maturity, sexual dimorphism, and reproduction.

Jameson, David L. (Dept. Biol., U. Ore.) SOCIAL PATTERNS IN THE LEPTODACTYLID FROGS SYRRHOPHUS AND ELEUTHERODACTYLUS. Copeia 1954(1): 36-38. Feb. 1954.

Judd, W. W. (Dept. Zool., U. West. Ont., London, Ont.) OBSERVATIONS ON THE FOOD OF THE LITTLE BROWNSNAKE, STORERIA DEKAYI, AT LONDON, ONTARIO. Copeia 1954 (1): 62-64. Feb. 1954.

REPTILES AND AMPHIBIANS--Continued

Martof, Bernard. (U. of Ga.) VARIATION IN A LARGE LITTER OF GARTERSNAKES, THAMNOPHIS SIRTALIS SIRTALIS. Copeia 1954(2): 100-105, illus. May 1954.
The litter described consisted of 85 young (78 alive), which is thought to be a record.

McConkey, Edwin H. (Dept. Biol., U. Fla.) A SYSTEMATIC STUDY OF THE NORTH AMERICAN LIZARDS OF THE GENUS OPHISAURUS. American Midland Naturalist 51(1): 133-171, illus. Jan. 1954.
See WR 67:35.

Mecham, John S. (U. Texas.) GEOGRAPHIC VARIATION IN THE GREEN FROG, RANA CLAMITANS LATREILLE. Texas Journal of Science 6(1): 1-25, illus. March 1954.
Detailed systematic study. Two races are recognized: R. c. clamitans in deep South, R. c. melanota elsewhere.

Miller, Malcolm R. (Dept. Anat., Stanford U.) FURTHER OBSERVATIONS ON REPRODUCTION IN THE LIZARD XANTUSIA VIGILIS. Copeia 1954(1): 38-40. Feb. 1954.

Milstead, William W. GEOGRAPHIC VARIATION IN THE GARTER SNAKE, THAMNOPHIS CYRTOPSIS. Texas Journal of Science 5(3): 348-379, illus. Sept. 1953.
Detailed taxonomic study; 4 subspecies are recognized.

Milstead, W. W. ECOLOGICAL DISTRIBUTION OF THE LIZARDS OF THE LA MOTA MOUNTAIN REGION OF TRANS-PECOS TEXAS. Texas Journal of Science 5(4): 403-415. Dec. 1953.

Moore, Clifford B. (Forest Park Mus., Springfield, Mass.) THE GRINNING CROCODILIAN AND HIS FOLKLORE. Scientific Monthly 78(4): 225-231, illus. April 1954.
Folklore and facts pertaining to crocodilians, especially to the American alligator, are interestingly reviewed.

Mosby, Henry S. (Va. Polytechnic Inst.) THE SNAPPING TURTLE. Virginia Wildlife 15(5): 16-17, illus. May 1954.
Capture and cleaning methods.

Moski, Henry, Jr. (20 St. James St., Hamden 14, Conn.) A LARGE LITTER OF COPPERHEADS (AGKISTRODON CONTORTRIX MOKESON). Copeia 1954(1): 67. Feb. 1954.
A litter of 14 is thought to be a new record.

Moulton, James M. (Dept. Biol., Bowdoin Coll.) NOTES ON THE NATURAL HISTORY, COLLECTION AND MAINTENANCE OF THE SALAMANDER AMBYSTOMA MACULATUM. Copeia 1954(1): 64-65. Feb. 1954.

Neill, Wilfred T. (Ross Allen Reptile Inst., Silver Springs, Fla.) EVIDENCE OF VENOM IN SNAKES OF THE GENERA ALSOPHIS AND RHADINAEA. Copeia 1954(1): 59-60. Feb. 1954.

Oliver, James A., and Charles E. Shaw. (N. Y. Zool. Soc.) THE AMPHIBIANS AND REPTILES OF THE HAWAIIAN ISLANDS. Zoologica 38(2): 65-95, illus. Sept. 1953.
The major work on the subject. Marine species are included. Each species is discussed as to origin, taxonomy, and natural history. An illustrated key provides easy identification. Origin and history of the fauna is discussed. Present fauna, including marine forms consists of 8 frogs, 4 turtles, 2 snakes, and 9 lizards. None is considered endemic.

Pearson, Oliver P. (MVZ, U. Calif., Berkeley.) HABITS OF THE LIZARD LIOLAEMUS MULTIFORMIS MULTIFORMIS AT HIGH ALTITUDES IN SOUTHERN PERU. Copeia 1954(2): 111-116, illus. May 1954.
Discusses, among other things, adaptations that permit this lizard to live in a severe climate at 15,000 feet.

REPTILES AND AMPHIBIANS--Continued

Savage, Jay M. (Nat. Hist. Mus., Stanford U.) A REVISION OF THE TOADS OF THE BUFO DEBILIS COMPLEX. Texas Journal of Science 6(1): 83-112, illus. March 1954.
Systematic study with detailed descriptions and discussion of phylogeny. Three races of B. debilis are recognized in U. S.

Savage, Jay M., and Frank S. Cliff. (Nat. Hist. Mus., Stanford U.) A NEW SNAKE, PHYLLORHYNCHUS ARENICOLA, FROM THE GULF OF CALIFORNIA, MEXICO. Proceedings of the Biological Society of Washington 67: 69-76, maps. March 1954.
Includes new key to all forms of genus.

Smith, Hobart M., and Ottys Sanders. (U. Ill.) DISTRIBUTIONAL DATA ON TEXAN AMPHIBIANS AND REPTILES. Texas Journal of Science 4(2): 204-219. June 1952.
Numerous new county records, 17 range extensions, a name change, a subspecies revived, a subspecies removed from Texas list, 4 forms added to Texas list, and taxonomic or descriptive notes on other forms. Constitutes an important supplement to Brown's Texas check list.

Stein, Hilda A. (So. Ill. U.) ADDITIONAL RECORDS OF AMPHIBIANS AND REPTILES IN SOUTHERN ILLINOIS. American Midland Naturalist 51(1): 311-312. Jan. 1954.

Stille, W. T. (Saunders Road, Lake Forest, Ill.) OBSERVATIONS ON THE REPRODUCTION AND DISTRIBUTION OF THE GREEN SNAKE, OPHEODRYS VERNALIS (HARLAN). Chicago Academy of Sciences, Natural History Miscellanea no. 127. 1-11 p., illus. Feb. 1954.
Devoted chiefly to correlation of laying dates with temperature, and possible correlation of distribution with temperature. "The southern limit of the reproductive range of the green snake lies in or near the average isothermal zone between 61° to 64° F. for the month of May." [W. B. Davis's increasingly convincing evidence that the species occurs in eastern Texas is no help to the theory. Stille does not consider Davis's records.]

Stuart, George R. (6308 Murietta Ave., Van Nuys, Calif.) OBSERVATIONS ON REPRODUCTION IN THE TORTOISE GOPHERUS AGASSIZI IN CAPTIVITY. Copeia 1954(1): 61-62. Feb. 1954.

Van Riper, Walker. (Denver Mus. Nat. Hist.) MEASURING THE SPEED OF A RATTLESNAKE'S STRIKE. Animal Kingdom 57(2): 50-53, illus. March-April 1954.
Tests were made with an exceptionally active, aggressive prairie rattler on different days and under various temperatures. Speed of strikes averaged 8.1 feet per second. A man can strike more than twice as fast. Timing was done with electronic speed-flash equipment. Data on some other animal speeds are given.

Woodbury, Angus M. (U. Utah.) STUDY OF REPTILE DENS. Herpetologica 10(1): 49-53. April 1954.
Many suggestions for ecological studies of reptiles; some of the suggestions do not involve dens.

FISHES

Bigelow, Henry B., and William C. Schroeder. (MCZ, Harvard U.) FISHES OF THE GULF OF MAINE. U. S. Fish & Wildlife Service, Fishery Bulletin 74 (vol. 53). viii + 577 p., 288 figs. 1953. $4.25 (buckram) from Superintendent of Documents.
Though termed a first revision of the 1925 volume of the same title, this is really a new book with much new material. It is so written and illustrated that it should be as useful to an angler as to an ichthyologist. Even the keys have been made simple. "Our aim has been a handbook for the easy identification of the fishes that occur in the Gulf of Maine, with summaries of what is known of the distribution, relative abundance, and more significant facts in the life history of each." The book appears to be excellent, interesting, and easily used. Certainly it is a goldmine of information.

FISHES--Continued

Branch of Federal Aid. SURVEY OF SPORT FISHERY PROJECTS, 1954. U. S. Fish & Wildlife Service, Circular 26. vi + 143 p. April 1954.
729 state, federal, college, and private projects are listed by state. Each is described briefly, sponsoring institution is named, estimated cost of current segment is stated, and name and address are given for individual or office responsible for handling inquiries.

Carlander, Kenneth D. (Iowa St. Coll.) HANDBOOK OF FRESHWATER FISHERY BIOLOGY WITH THE FIRST SUPPLEMENT. Wm. C. Brown Co., Dubuque, Iowa. v + 429 p. + 5 charts. 1953. $6.50.
A handbook of tabular data compiled from almost 1600 papers. Information has been converted to common terms for easy comparison. The author has extracted from papers the available information on growth rates, length-weight relationships, creel census data, population density, annual yield, egg counts, etc. for about 160 species, including 31 not previously treated. The main book divisions are: life histories, population data, conversion tables, bibliography and nomographs. The 1953 edition includes the handbook published in 1950 (WR 62:52) plus a first supplement which appears separately in the back. Owners of the 1950 handbook may obtain an equivalent of the present book by purchase of First Supplement which is still on sale for $3.00.--John T. Linehan.

INVERTEBRATES

Baer, Jean G. ECOLOGY OF ANIMAL PARASITES. University of Illinois Press. xii + 224 p., illus. 1951. $5.00. [From long review by W. H. Taliaferro, Quarterly Review of Biology 27(2).]
"...an attempt 'to review the field of parasitology from all possible angles and to show that parasites are subject to the same general laws that govern all free-living organisms.' ...In spite of the immunological and biochemical shortcomings, the book will be of great interest to parasitologists, ecologists, and biologists because it is thoroughly biological in its concepts and contains many stimulating speculations."

Harwood, P. D., committee chairman. A PRELIMINARY LIST OF COMMON NAMES FOR HELMINTHS. Journal of Parasitology 39(3): 348-351. June 1953.
List of common names proposed as standard for some 185 species or groups of parasitic worms.

Light, S. F., and many others. INTERTIDAL INVERTEBRATES OF THE CENTRAL CALIFORNIA COAST. University of California Press. xiv + 446 p., illus. 1954. $5.00.
An important work by 22 contributors, many of them specialists. It is primarily a guide to identification, consisting largely of keys and illustrations. The book is intended for advanced students of invertebrate zoology and marine ecology, not for beginners or specialists. Keys have been made as simple as material permits. There is a relatively short discussion of each major group, usually followed by keys and lists. Rare forms are usually excluded, and treatment of a group is necessarily proportional to present knowledge of it. A few groups are discussed only briefly, but in most groups keys run to genera or species. Sections on large marine phyla are, of course, lengthy and detailed. One section keys out the typically intertidal fishes, another the more important marine algae. Tunicate chordates are treated fully. Most illustrations are drawings that show examples of groups and explain diagnostic characters. Suggestions are given for collection and preservation, and 51 pages are devoted to instructions for field studies of specific communities. The selected, classified bibliography occupies 39 pages.

Pulley, T. E. (U. Houston.) AN ILLUSTRATED CHECK LIST OF THE MARINE MOLLUSKS OF TEXAS. Texas Journal of Science 4(2): 167-199. June 1952.

VEGETATION--GENERAL, ECOLOGY, CONTROL, TECHNIQUES

Bank, Theodore P., II. (U. Mich.) BIOLOGICAL SUCCESSION IN THE ALEUTIANS. Pacific Science 7(4): 493-503, illus. Oct. 1953.
A discussion based on comparative field studies and literature reports. "In general, vegetation is much less stable and biological succession more erratic in the Aleutians than on the mainlands."

Boyce, Stephen G. (Ohio U., Athens.) THE SALT SPRAY COMMUNITY. Ecological Monographs 24(1): 29-67, illus. Jan. 1954.
Good observational and experimental study of effect of natural salt spray on seaside vegetation. Shows how salt determines growth form.

Robertson, William B. EVERGLADES FIRES--PAST, PRESENT AND FUTURE. Everglades Natural History 2(1): 11-16, illus. March 1954.
One of several articles in the same issue that discuss causes and ecological consequences of fires in the Everglades region. Fires, many of them set by lightening, have dominated the region for thousands of years. Man's drainage has made the fires deeper and more destructive. Without fire, the pinelands and the sawgrass glades would be eliminated by mangrove and hammock vegetation. Fires have enormously limited the hammock types and constitute a real threat to the remainder. Under present drainage conditions fires have been notable in 2 respects: "1. Destruction of organic soils has decreased the water-holding capacity of the glades due to the loss of the peat and marl seal over the highly permeable underlying limestone. 2. Destruction of hardwood forest vegetation, both rock ridge hammocks and tree islands, has been widespread." Fire-fighting is necessary today to prevent hard, destructive fires. But if we wish to keep what we regard as natural conditions and natural vegetation, some fire, preferably controlled burning, may be necessary in the future.

Tyron, E. H., and Rudolfo Markus. DEVELOPMENT OF VEGETATION ON CENTURY-OLD IRON-ORE SPOIL BANKS. West Virginia University, Agricultural Experiment Station, Bulletin no. 360. 63 p., illus. 1953. [From Journal of Forestry 52(1).]

VEGETATION--FLORAS AND COMMUNITIES

Donahue, Wm. H. (King's Coll., Wilkes-Barre, Pa.) SOME PLANT COMMUNITIES IN THE ANTHRACITE REGION OF NORTHEASTERN PENNSYLVANIA. American Midland Naturalist 51(1): 203-231, illus. Jan. 1954.
"The purpose of the present study is to analyze and describe in terms of qualitative and quantitative phyto-sociological concepts some of the forest communities in this transitional region, to relate the communities to their topographic and edaphic factors, and to discuss the interrelationships of the various communities as they occur on the Pocono Plateau in Bear Creek Township, Luzerne County, Pennsylvania..."

Fay, Marcus Joseph. THE FLORA OF SOUTHWESTERN IOWA. Ph. D. thesis, University of Iowa. 507 p. 1953. [From Dissertation Abstracts 14(3).]
"Brief descriptions of physiographic and climatic features of southwestern Iowa make up the introductory portion of the dissertation. Following these, plant communities are classified by habitat and described by listing characteristic and common plants found in each. The annotated catalogue of vascular plants constitutes the major part of the dissertation; it includes frequency, distributional, and habitat data for each species. The distribution of each species now known from southwestern Iowa is indicated on individual distribution maps."

Harrington, H. D. (Colo. A & M Coll.) MANUAL OF THE PLANTS OF COLORADO. Sage Books, Denver. x + 666 p., illus. 1954. $8.00.
A complete manual, with detailed keys to and descriptions of more than 2700 species of vascular plants--also a description of vegetation zones by David F. Costello. The author's recognition, in both the introduction and the individual descriptions, of the incompleteness of knowledge of the flora, will be most helpful in guiding users of the manual and in stimulating plant study in Colorado.--Neil Hotchkiss.

VEGETATION--FLORAS AND COMMUNITIES--Continued

Reed, Clyde F. THE FERNS AND FERN-ALLIES OF MARYLAND AND DELAWARE INCLUDING DISTRICT OF COLUMBIA. Reed Herbarium, Baltimore. 286 p., 271 illus., 58 maps. 1953. $3.00. [From A.I.B.S. Bulletin 4(1).]
Semitechnical; for both amateurs and professionals.

VEGETATION--FOREST

Anonymous. [WOODS ARE POOR PASTURES.] Journal of Forestry 52(3): 228. March 1954.
"Woodland pastures averaged only about 275 pounds of dry forage an acre compared to improved open pasture which produced from 4,000 to 6,000 pounds according to recent findings of the University of Wisconsin College of Agriculture. The open pasture provided 31 times as much protein as the wooded pastures. Soil tramplings due to grazing in the woodland increased the water runoff from 197 gallons to 9,308 gallons per acre in one year." Copied completely.

Clark, F. Bryan. FOREST PLANTING ON STRIP-MINED LAND IN KANSAS, MISSOURI, AND OKLAHOMA. U. S. Forest Service, Central States Forest Experiment Station (Columbus 15, Ohio.), Technical Paper no. 141. 1-33 p., illus. March 1954.
Reports on degree of success with various tree species; factors such as site, pests, etc. that effect success; and makes planting recommendations.

Division of Forest Economics. FOREST STATISTICS FOR THE EASTERN SHORE OF MARYLAND. U. S. Forest Service, Northeastern Forest Experiment Station (Upper Darby, Pa.). Forest Statistics Series: Maryland no. 3. iii + 17 p., map. 1954.

Kieran, John. AN INTRODUCTION TO TREES. Hanover House, Garden City, N. Y. 77 p., illus. 1954. $2.95.
Perhaps the best and most attractive introduction to trees for the public and young people. One hundred familiar trees, mostly eastern, including a few shrubs, are described interestingly, accurately, and informatively. The illustrations of each tree, all in full color, by Michael H. Bevans, deserve especial praise. Both beautiful and detailed, they often show leaves, bark, flowers, and fruit in pleasing color combinations and arrangements. They occupy about a third of the space. A botanist found few flaws in the book and admired it strongly. Though slim, the volume measures 8 x 11 in., is well bound, and should be useful and appealing to many people who would never use a technical manual.

Moravets, F. L. FOREST STATISTICS FOR CLATSOP COUNTY, OREGON. U. S. Forest Service, Pacific Northwest Forest and Range Experiment Station (Portland, Ore.), Forest Survey Report no. 113. iii + 24 p., map. April 1954.

Pissot, Henry J. FOREST RESOURCES OF NORTH IDAHO. U. S. Forest Service, Northern Rocky Mountain Forest & Range Experiment Station (Missoula, Mont.), Station Paper no. 35. 1-37 p., graphs. Dec. 1953.

Southern Forest Survey. FOREST STATISTICS FOR ALABAMA. U. S. Forest Service, Southern Forest Experiment Station (New Orleans, La.), Forest Survey Release 73. ii + 52 p., maps and graphs. Dec. 1953.
Detailed report, with many tables and graphs. Sixty-four percent of the state is forested but most of the timber is pole-size or smaller. Sixty-three percent of forest land is considered well stocked, albeit most stock is small. Amount of sawtimber is still declining. Forest acreage is up 10% since 1936.

VEGETATION--PASTURE AND RANGE

Allred, B. W. (USDA, Wash., D. C.) DROUGHT DAMAGE ON SOUTHWESTERN RANGES. Soil Conservation 19(11): 243-248, illus. June 1954.
The recent drought has been the worst and longest in recorded history. Trees over 300 years old have died from lack of water. Many ranches have been without livestock for 2 years. Some areas have had 7 droughty years. Trees, brush, and grass have suffered, but enough remain for reestablishment. All grazing land has had some plants killed, but land that was grazed moderately or less came through best. Conservation ranchers have had less loss of cash and range than others. "Before the drought it was estimated that 10 to 12 million acres of rangeland needed to have seed planted on them in order to restore their productivity. We are afraid that the present drought has added another 3 or 4 million acres..." Survival of different types of grasses in various situations is discussed.

Bogusch, Edwin R. (Tex. Coll. Arts & Ind., Kingsville.) BRUSH INVASION IN THE RIO GRANDE PLAIN OF TEXAS. Texas Journal of Science 4(1): 85-91. March 1952.
Brush, especially mesquite, recently has taken over large areas of grassland, but these woody species have been in the region for a very long time. Their recent dominance is attributed to cessation of fires and to weakening and soil disturbance of grasslands by intensive grazing. Once established, brush can take drought better than grass can and therefore strengthens its grip in dry periods.

Ellison, Lincoln. (Intermtn. For. & Range Exp. Sta., Ogden, Utah.) SUBALPINE VEGETATION OF THE WASATCH PLATEAU, UTAH. Ecological Monographs 24(2): 89-184, illus. April 1954.
Long, important study of an area that was wrecked by overgrazing before 1900. Great damage was done to its watershed, grazing, and forest values. Grazing has been regulated by the Forest Service since early in this century, but original damage was so great that erosion is still going on. The paper gives a fine account of the vegetation and factors at work on different sites. Effects of livestock are discussed throughout and effects of big game, rodents, and other wildlife are discussed briefly.

Parker, Kenneth W. (U. S. Forest Service.) APPLICATION OF ECOLOGY IN THE DETERMINATION OF RANGE CONDITION AND TREND. Journal of Range Management 7(1): 14-23, illus. Jan. 1954.
Good general discussion with many references cited. Does not discuss wildlife, but is valuable as background information and as guide to literature.

VEGETATION--WET-LAND

Daily, Fay Kenoyer. (Butler Univ.) THE CHARACEAE OF INDIANA. Butler University Botanical Studies 11 (paper 2): 5-49, illus. Aug. 1953.
Keys, describes, and lists and maps localities for one species of Tolypella, 5 of Nitella, and 13 of Chara. There is a bibliography of 43 items.--Neil Hotchkiss.

Hinde, Howard P. (San Francisco St. Coll.) THE VERTICAL DISTRIBUTION OF SALT MARSH PHANEROGAMS IN RELATION TO TIDE LEVELS. Ecological Monographs 24(2): 209-225, illus. April 1954.
Study was made on southern part of San Francisco Bay, where dominants are Salicornia ambigua, Spartina leiantha, and Distichlis spicata. "The vertical distribution of these seed plants is effectively controlled by the degree of tidal emergence and submergence to which they are subjected." Comparisons are made with eastern U. S. and England.

VEGETATION--WET-LAND--Continued

Ogden, Eugene C. (N. Y. St. Mus., Albany.) KEY TO THE NORTH AMERICAN SPECIES OF POTAMOGETON. New York State Museum Circular 31. 1-11 p., illus. Feb. 1953.

Unconventional type of key intended for identification of incomplete specimens. "When complete parts are at hand, this key usually will work smoothly to the species; lacking some, it mostly will eliminate all but a few. Resort to descriptions in floras and monographs may then be necessary."

GENERAL CONSERVATION, WATER, AND CLIMATE

Colman, Edward A. VEGETATION AND WATERSHED MANAGEMENT. Ronald Press Co., N. Y. 412 p., illus. 1953. $7.00. [From long review by H. G. Wilm, Journal of Forestry 52(4).]

This book, sponsored by the Conservation Foundation, is an authoritative, well-rounded reference on the subject. "...it will provide an excellent foundation for the further development of sound practices in applied watershed management."

Committee on Use and Care of Natural Resources. PRESENT NEEDS FOR RESEARCH ON THE USE AND CARE OF NATURAL RESOURCES. National Academy of Sciences--National Research Council (Wash. 25, D. C.), Publication 288. 1-35 p. 1953. 50¢.

Research needs considered most important by a panel of experts are discussed in 16 short papers: Introduction, by P. B. Sears. Basic Research--A Critical Need of Forest Conservation Today, by C. F. Korstian. Research Needed on the Use and Care of Grasslands, by H. C. Hanson. Research and Policy Development in Water Resources, by R. G. Snider. The Interrelationships of Wildlife Populations, by I. N. Gabrielson. The Conservation of Tropical Soils, by Richard Bradfield. Comparative Geographical Study of the Humid Tropics, by K. J. Pelzer. Conservation and Marine Fisheries, by E. F. Thompson. Some Suggestions for Investigation and Research in the Field of Mineral Resources, by A. M. Bateman. Notes of Fields of Research on Mineral Nutrients, by G. E. Hutchinson. Economic Growth and Resource Use, by R. D. Teeters. Tentative Statement on the Need for a Population Policy, by S. A. Cain and R. C. Cook. On the Communication of Conservation, by S. A. Cain. On the Measurement of the Effectiveness of Programs of Technical Assistance and Resource Development, by S. A. Cain. Research Recommendations, by S. B. Jones. Notes on International Aspects of Education and Research in Resources Conservation, by H. J. Coolidge. The last 2 pages tell of the backgrounds of the writers.

Davis, Kingsley. (Columbia U.) FUTURE POPULATION TRENDS AND THEIR SIGNIFICANCE. Trans. 18th N. Amer. Wildl. Conf. 8-21 p. 1953.

Authoritative discussion of human population forecasts and their difficulties and errors. Factors that will affect trends in underdeveloped countries are given much attention.

Duck, Les. (Army Engineers, Woodward, Okla.) WHAT ABOUT DUST STORMS? Oklahoma Game and Fish News 10(5): 3-5, illus. May 1954.

Good evidence is given that severe dust storms have swept the Great Plains for 1,400 years or more and are natural phenomena of the region. They occurred before ploughing or livestock came in. They still occur on ungrazed, vegetated areas after 5 years of drought. The little rain that does fall often comes in wind-driven torrents that largely run off, doing real harm and little good. Some conservationists are attributing dust storms and muddy streams to bad agricultural practices even where these conditions have prevailed for centuries. Certainly bad land management can contribute to and speed up wind erosion, but climate is the basic factor. Conservationists who overstate their case and ignore the climatic factor are laying themselves open to ridicule and discredit.

GENERAL CONSERVATION, WATER, AND CLIMATE--Continued

Harrar, J. G. (Rockefeller Found., N. Y.) MEETING HUMAN NEEDS THROUGH AGRICULTURE. Trans. 18th N. Amer. Wildl. Conf. 46-50 p. 1953.
World food supplies could be increased by wider application of known methods of conventional agriculture and by unconventional methods such as new uses of marine resources, conversion of salt water to fresh, more direct use of solar energy, and by nuclear energy.

Hines, L. G. (Dartmouth Coll.) THE MYTH OF IDLE RESOURCES: A RECONSIDERATION OF THE CONCEPT OF NONUSE IN CONSERVATION. Trans. 18th N. Amer. Wildl. Conf. 28-35 p. 1953.
A discussion of the dangers of commercial pressures on natural resources and of fallacious arguments employed in favor of exploitation.

Lowdermilk, W. C. CONQUEST OF THE LAND THROUGH 7,000 YEARS. U. S. Department of Agriculture, Agriculture Information Bulletin no. 99. 1-30 p., illus. Aug. 1953.
Highly interesting booklet that tells of soil conservation and soil destruction through the ages in many countries. Ruined cities speak volumes about past failures. Flourishing fields point the way to successful approaches. The author has studied in the lands about which he writes.

McArdle, Richard E. (U. S. Forest Service.) MULTIPLE USE--MULTIPLE BENEFITS. Trans. 18th N. Amer. Wildl. Conf. 53-58 p. 1953.
Principles and problems of the Forest Service in managing public lands for the greatest permanent good of the greatest possible number of people.

McKay, Douglas. (U. S. Dept. Int.) RESOURCES FOR THE FUTURE. Trans. 18th N. Amer. Wildl. Conf. 22-27 p. 1953.
Policies and problems of the Secretary, Department of the Interior.

Ordway, Samuel H., Jr. RESOURCES AND THE AMERICAN DREAM. Ronald Press Co., N. Y. 55 p. 1953. $2.00. [From review by Henry Clepper, Journal of Forestry 52(1).]
The author (vice president of the Conservation Foundation) maintains that increasing populations and rising standards of living cannot be sustained indefinitely by new scientific discoveries and exploitation of new resources. "He believes that under our free enterprise system adjustments can be made voluntarily to bring drain into balance with supply, provided we distinguish needs from wants. Land-use planning and rationing of the distribution of raw materials--government, industry, and technology cooperating--are advocated."

Peterson, Elmer T. (Oklahoma City.) BIG DAM FOOLISHNESS. Trans. 18th N. Amer. Wildl. Conf. 93-102 p. 1953.
"I have proved that agricultural flood control is the modern scientific method which should replace the obsolete surface reservoirs of the Army Engineer type and magnitude. I charge that the Army Engineers do not understand large-scale flood control, and this charge is abundantly supported..."--L. F. Stickel.

Shapley, Harlow, editor. CLIMATIC CHANGE: EVIDENCE, CAUSES, AND EFFECTS. Harvard University Press. xii + 318 p., illus. 1954. $6.00. [From Science News Letter 65(8).]
"A group of authoritative papers brought together by the Rumford Committee which tell the story of evolution as affected by changes in climate, and the evidence to be found of these changes as recorded in rocks, tree rings, and the melting point of bone marrow and other such indexes." Based on symposium participated in by experts in many fields, from astronomy and meteorology to paleontology, glaciology, and studies of pollen deposits and radiocarbon datings.

GENERAL CONSERVATION, WATER, AND CLIMATE—Continued

Tufts, Nathan. (Greenfield, Mass.) GRASS ROOTS CONTROL IN WATERSHED PLANS AND MANAGEMENT. Trans. 18th N. Amer. Wildl. Conf. 103-108 p. 1953.
A discussion of the organization and objectives of the Connecticut River Watershed Council. The aim is proper handling of all renewable resources.—L. F. Stickel.

Woodward, Hugh B. (N. M. Game Prot. Assn., Albuquerque, N. M.) COMPETITION FOR PUBLIC LANDS. Trans. 18th N. Amer. Wildl. Conf. 58-70 p. 1953.
Author's summary: "For every paying grazing permittee upon the national forests in the eleven western public lands states, there were 229 hunters and fishermen seeking recreational privileges on the national forests. For every cow, every horse, every sheep and every goat grazing under paid permit upon the national forests there were 1.09 hunters and fishermen enjoying recreational privileges thereon. For every dollar paid to the Federal Government for grazing fees in the eleven western public lands states, hunters and fishermen paid to the several state governments $3.92 for hunting and fishing licenses, i.e., recreational privileges upon the national forests."

SOILS

Goldston, E. F., and others. SOIL SURVEY OF HAYWOOD COUNTY, NORTH CAROLINA. U. S. Soil Conservation Service, Series 1940, no. 11. 1-112 p., illus. + large folding maps. Jan. 1954. $1.25 from Superintendent of Documents.

Leighty, R. G., and others. TAYLOR COUNTY, IOWA, SOILS. U. S. Soil Conservation Service, Soil Survey Series 1947, no. 1. iv + 74 p., illus. + large folding maps. Feb. 1954. Price not stated. Order from Superintendent of Documents.

Miller, John T., and others. SOIL SURVEY OF TOWNS COUNTY, GEORGIA. U. S. Soil Conservation Service, Series 1939, no. 16. 1-121 p., illus. + large folding maps. Feb. 1954. $1.50 from Superintendent of Documents.

Rudolph, Foster, and others. SOIL SURVEY OF CARTER COUNTY, TENNESSEE. U. S. Soil Conservation Service, Series 1942, no. 4. 1-199 p., illus. + large folding maps. Nov. 1953. $2.25 from Superintendent of Documents.

Simmons, C. S., and others. SOIL SURVEY OF HILLSBOROUGH COUNTY, NEW HAMPSHIRE. U. S. Soil Conservation Service, Series 1940, no. 13. 1-114 p., illus. + large folding maps. Dec. 1953. $1.50 from Superintendent of Documents.

Swenson, G. A., and others. SOIL SURVEY OF JACKSON COUNTY, ALABAMA. U. S. Soil Conservation Service, Series 1941, no. 8. 1-222 p., illus. + large folding maps. March 1954. Price not stated. Order from Superintendent of Documents.

Taylor, Arthur E., and others. SOIL SURVEY OF ALACHUA COUNTY, FLORIDA. U. S. Soil Conservation Service, Series 1940, no. 10. 1-66 p., illus. + large folding maps. Feb. 1954. $1.00 from Superintendent of Documents.

Wildermuth, Robert, and others. SOIL SURVEY OF TUSCARAWAS COUNTY, OHIO. U. S. Soil Conservation Service, Series 1938, no. 32. 1-104 p., illus. + large folding maps. Dec. 1953. $2.75 from Superintendent of Documents.

TRANSLATIONS OF RUSSIAN WILDLIFE LITERATURE.

Translations listed in this section were made at the Bureau of Animal Population, Oxford, England. A carbon copy of each is filed in the office of the Section of Distribution of Birds and Mammals, U. S. Fish & Wildlife Service, Room 61, U. S. National Museum. They may be studied in that office, or they may be borrowed on interlibrary loan through the Department of Interior Library, Washington 25, D. C. Requests for loans should be addressed to that library. The translation desired should be fully identified by translation number, author, title, and journal reference.

To the best of our knowledge, these translations are not available elsewhere in this country except for an incomplete set of photostatic copies in the possession of Dr. Tracy L. Storer, University of California at Davis.

The list that follows was provided through the courtesy of Dr. John W. Aldrich and Miss Emma M. Charters, both of the Section of Distribution of Birds and Mammals, U. S. Fish & Wildlife Service.

Aizenshtadt, D. S. 1945. SOME DATA ON THE DISTRIBUTION AND MODE OF LIFE OF THE BROWN RAT (RATTUS NORVEGICUS BERKENH.) IN THE FOREST ZONE OF THE NORTH-WEST OF THE R.S.F.S.R. Zoologicheskii Zhurnal 24: 182-189, 2 figs. TRANS. 231.

Alikina, V. E. 1949. MOISTURE-EXCHANGE IN THE SEXUAL CYCLE OF MUS MUSCULUS, MICROTUS ARVALIS AND MERIONES TRISTRAMI. Proc. Lenin Acad. Agric. Sci. no. 3, p. 44-48, 4 figs. TRANS. 252.

Anonymous. 1934. RESEARCH ON THE EPIZOOTOLOGY OF PLAGUE AMONG GROUND SQUIRRELS (CITELLUS PYGMAEUS PALL.) IN AN ENDEMIC FOCUS. RESULTS OF THE WORK OF THE NORTHERN CAUCASUS ANTI-PLAGUE ORGANIZATION, 1926-33. Rev. Microbiol., Saratov, 13: 219-222. TRANS. 74.

Anonymous. 1941. METHODS FOR FORECASTING CHANGES IN THE NUMBERS OF FUR-BEARING ANIMALS AND RENEWING THEIR NATURAL SUPPLIES. PT. 1. Trans. Centr. Lab. Biology & Game Industry, Zagotzhivsuir'e, Moscow, no. 5. p. 125-126. TRANS. 137.

Anonymous. 1941. METHODS FOR FORECASTING CHANGES IN THE NUMBERS OF FUR-BEARING ANIMALS AND RENEWING THEIR NATURAL SUPPLIES. PT. 2. Trans. Centr. Lab. Biol. & Game Industry no. 5. p. 129-212. TRANS. 138.

Antonovskii, A. I. 1931. OBITUARY: S. S. MOREZHKOVSKII (1863-1930). Plant Protection, Leningrad, 7: 419-424. TRANS. 70.

Antonovskii, A. I. 1931. THE PRESENT POSITION OF RODENT CONTROL BY THE BACTERIOLOGICAL METHOD IN THE U.S.S.R. Plant Protection, Leningrad, 7: 259-268. TRANS. 75.

Argiropulo, A. P. 1929. IDENTIFICATION KEY FOR RATS OF THE GENUS RATTUS FITZINGER IN THE FAUNA OF THE U.S.S.R. Plant Protection, Leningrad, 5: 663-666. TRANS. 199.

Babenuishev, V. P. 1938. THE IMPORTANCE OF THE FUR AND SIZE OF BODY OF SOME SPECIES OF RODENTS IN CONNECTION WITH LOSS OF HEAT AND THEIR RESISTANCE TO EXTERNAL FACTORS. Zoologicheskii Zhurnal 17: 540-548. TRANS. 151.

Barabash-Nikiforov, I. I. 1943. ON THE MOUSE-LIKE RODENTS (FAMILY MURIDAE) OF THE COMMANDER ISLANDS. Zoologicheskii Zhurnal 22: 53-54. TRANS. 168.

Baranovskaya, T. N., and A. M. Kolosov. 1935. FOOD HABITS OF THE FOX (VULPES VULPES L.). Zoologicheskii Zhurnal 14(3): 523-50. TRANS. 53.

TRANSLATIONS OF RUSSIAN WILDLIFE LITERATURE--Continued

Bashenina, N. V., and N. P. Lavrov. 1941. TAKING A CENSUS OF THE FOODS OF THE FOX AND ERMINE (SMALL RODENTS AND INSECTIVORES). In Symposium: Methods for forecasting changes in the numbers of fur-bearing animals and renewing their natural supplies. Trans. Centr. Lab. Biol. & Game Industry, Zagotzhivsuir'e, Moscow, no. 5. p. 100-104. TRANS. 133. For references, see Trans. 137.

Berger, N. M. 1944. ESTABLISHMENT OF NEW FUR-BEARING ANIMALS IN WEST SIBERIA. Zoologicheskii Zhurnal 23: 267-274. TRANS. 232.

Blagosklonov, K. N. 1946. PECULIARITIES OF THE DISTRIBUTION OF MOUSE-LIKE RODENTS IN THE WESTERN PROVINCES OF UKRAINE AND IN SOUTHERN POLAND. Zoologicheskii Zhurnal 25: 87-94, 5 figs. TRANS. 36.

Bobrinskii, N. A. 1944. KEY TO THE MAMMALS OF THE U.S.S.R. (CARNIVORA). p. 109-161. TRANS. 200.

Bobrinskii, N. A., and A. P. Kuzyakin. 1944. KEY TO THE MAMMALS OF U.S.S.R. (INSECTIVORA.) p. 35-58. TRANS. 200.

Bobrinskii, N. A., B. A. Kuznetzov, and A. P. Kuzyakin. 1944. KEY TO THE MAMMALS OF THE USSR. GENERAL NOTES ON SYSTEMATICS. MAMMALIA. State Pub. House "Sovetskaya Nauka," Moscow. TRANS. 200.

Bobrinskii, N. A., and others. 1944. KEY TO THE MAMMALS OF THE U.S.S.R. (CETACEA). p. 179-217, figs. 104-148. TRANS. 200.

Bobrinskii, N. A., and others. 1944. KEY TO THE MAMMALS OF THE U.S.S.R. (PINNIPEDS). p. 162-178. TRANS. 200.

Bobrinskii, N. A., and others. 1944. KEY TO THE MAMMALS OF U.S.S.R. (UNGULATA). p. 218-261, pls. and figs. TRANS. 200.

Chirkova, A. F. 1941. METHODS FOR FORECASTING POPULATION CHANGES IN THE COMMON FOX (VULPES VULPES L.). In Symposium: Methods for forecasting changes in the numbers of fur-bearing animals and renewing their natural supplies. Trans. Centr. Lab. Biol. & Game-Industry, Zagotzhivsuir'e, Moscow, no. 5. p. 78-99. TRANS. 132. For references, see Trans. 137.

Danilov, D. N. 1941. METHODS FOR ESTIMATING CROPS OF THE SQUIRREL'S FOODS WHEN PREDICTING THE ANIMAL'S NUMBERS. In Symposium: Methods for predicting changes in the numbers of fur-bearing animals and renewing their natural supplies. Trans. Centr. Lab. Biol. & Game-Industry, Zagotzhivsuir'e, Moscow, no. 5. p. 34-45. TRANS. 129. For references, see Trans. 137.

Demyashev, M. P. 1933. AN IMPROVED TRAP FOR RODENTS. Rev. Microbiol., Saratov, 12(3): 211-212. TRANS. 63.

Dmitrevskaya, N. A. 1931. EXPERIMENT IN USING NEW MICROBIOLOGICAL CULTURE MEDIA FOR RODENT EXTERMINATION. Plant Protection, Leningrad, 7: 282-292. TRANS. 76.

Dukel'skaya, N. M. 1935. THE MOLE-RAT [SPALAX] AND MOLE-RAT TRAPPING. (In The thin-toed ground squirrel, the fat dormouse, the mole-rat, and the chipmunk.) All-Union Cooperative Assn. Publ. House, Moscow and Leningrad. p. 71-79, figs. 28-32. TRANS. 142.

Dunaeva, T. N., and V. V. Kucheruk. 1941. MATERIAL ON THE ECOLOGY OF THE TERRESTRIAL VERTEBRATES OF THE TUNDRA OF SOUTH YAMAL. Moscow Soc. Naturalists, n.s. Zool. Sect. 4(19): 1-80. TRANS. 209.

TRANSLATIONS OF RUSSIAN WILDLIFE LITERATURE--Continued

Egorov, A. N. 1933. ON THE IMPORTANCE OF PREDATORY BIRDS IN THE EPIDEMIOLOGY OF PLAGUE. Rev. Microbiol., Saratov, 12(2): 133-134. TRANS. 65.

Evseeva, V. E., and I. P. Firsov. 1932. FLEAS AS RESERVOIRS OF THE PLAGUE BACILLUS DURING THE WINTER. Rept. no. 1. Rev. Microbiol., Saratov, 11: 281-283. TRANS. 79.

Fal'kenshtein, B. Yu. 1939. EXPERIMENTAL USE OF BARIUM ARSENATE IN VOLE CONTROL. Plant Protection, Leningrad, 19: 29-36. TRANS. 103.

Fal'kenshtein, B. Yu. 1939. NEW POISONS FOR THE CONTROL OF RODENTS. (Preliminary notice.) Plant Protection, Leningrad, 18: 183. TRANS. 102.

Fedorova, T. V., V. A. Chizhova, and A. A. Shmeleva. 1933. [ON THE CHARACTERISTICS OF THE HELMINTH FAUNA OF HILLOCK [HOUSE] MICE (MUS MUSCULUS HORTULANUS NORDM.) IN THE NORTHERN CAUCASUS REGION, AND THE CONNECTION BETWEEN INFECTION BY HELMINTHS AND INFECTION BY A STREPTOCOCCUS.] Rev. Microbiol., Saratov, 12(3): 183-188. TRANS. 64.

Fenyuk, B. K. 1934. THE MASS INCREASE OF MOUSE-LIKE RODENTS IN STALINGRAD REGION IN THE AUTUMN OF 1933. Rev. Microbiol., Saratov, 13(3): 235-247. TRANS. 61.

Fenyuk, B. K. 1937. THE INFLUENCE OF AGRICULTURE ON THE NUMBER OF MOUSE-LIKE RODENTS AND THE BIOLOGICAL FOUNDATION OF RODENT CONTROL. Rev. Microbiol., Saratov, 16(3-4): 478-492. TRANS. 52.

Fenyuk, B. K. 1941. THE MASS INCREASE OF MOUSE-LIKE RODENTS IN THE SOUTH-EAST OF THE R.S.F.S.R. IN 1939. In Symposium: "Rodents and rodent control," no. 1, p. 209-223. From the State Institute of Microbiology and Epidemiology for the Southeast of the U.S.S.R., Saratov. TRANS. 194.

Fenyuk, B. K., and M. P. Demyashev. 1936. A STUDY OF GERBILLE (MAMMALIA, GLIRES) MIGRATIONS BY THE RINGING METHOD. Rev. Microbiol., Saratov, 15(1): 89-108, 8 figs. TRANS. 43.

Fenyuk, B. K., and M. P. Demyashev. 1936. LENGTH OF LIFE OF THE GERBILLE PALLASIOMYS MERIDIANUS PALL. (MAMMALIA) IN NATURE. Rev. Microbiol., Saratov, 15(3-4): 407-412, 2 figs. TRANS. 44.

Fenyuk, B. K., and M. V. Sheikina. 1938. A STUDY OF VOLE - MICROTUS ARVALIS PALL. (MAMMALIA) - MIGRATIONS BY THE RINGING METHOD. Scientific Reports Saratov State Univ., 1(14), Biological Series, no. 2. 85-102, 2 figs. TRANS. 45.

Fenyuk, B. K., and M. V. Sheikina. 1940. THE LENGTH OF LIFE OF THE VOLE MICROTUS ARVALIS PALL. IN NATURAL CONDITIONS. Rev. Microbiol., Saratov, 19: 571-590. TRANS. 175.

Fetisov, A. S. 1942. FRESH RESEARCH ON THE RODENT FAUNA OF WESTERN TRANSBAIKALIA. Bull. Inst. Sci. Biol., Geogr., Irkutsk, 9: 121-144. TRANS. 248.

Fetisov, A. S. 1942. THE HABITAT DISTRIBUTION AND RELATIVE NUMBERS OF MOUSE-LIKE RODENTS IN THE FOREST-STEPPE AND FOREST ZONES OF THE SOUTHERN EXTREMITY OF WEST TRANSBAIKALIA. Bull. Inst. Sci. Biol. Geogr., Irkutsk, 9(1-2): 73-107. TRANS. 235.

Folitarek, S. 1932. THE DISTRIBUTION AND BIOLOGY OF THE MOLE (TALPA EUROPAEA BRAUNERI SATUN.) AND MOLE CATCHING IN UKRAINE. Bull. Soc. Nat. Moscou 41: 235-302. TRANS. 213.

TRANSLATIONS OF RUSSIAN WILDLIFE LITERATURE--Continued

Formozov, A. N. 1932. FORMULA FOR TAKING A CENSUS OF MAMMALS BY THEIR TRACKS. Zoologicheskii Zhurnal 11(2): 66-69. TRANS. 100.

Formozov, A. N. 1934. BIRDS OF PREY AND RODENTS. (Some little-studied problems in the ecology of feathered predators.) Zoologicheskii Zhurnal 13: 664-698. TRANS. 150.

Formozov, A. N. 1935. FLUCTUATIONS IN THE NUMBERS OF ECONOMICALLY EXPLOITED ANIMALS. All-Union Cooperative Assn. Publ. House, Moscow and Leningrad. 108 p. TRANS. 94.

Formozov, A. N. 1937. A SHORT SURVEY OF WORKS ON THE ECOLOGY OF BIRDS AND MAMMALS DURING TWENTY YEARS (1917-1937). Zoologicheskii Zhurnal 16: 916-949. TRANS. 28.

Formozov, A. N. 1942. STUDY OF FLUCTUATIONS IN THE NUMBERS OF EXPLOITED ANIMALS AND THE ORGANIZATION OF 'YIELD FORECASTS' IN GAME MANAGEMENT IN THE U.S.S.R. BETWEEN 1917-1942. Zoologicheskii Zhurnal 21: 251-258. TRANS. 208.

Formozov, A. N. 1944. NOTES ON THE ECOLOGY AND AGRICULTURAL IMPORTANCE OF SPARROWS (PASSER DOMESTICUS BACTRIANUS ZAR. ET KUDASCH. AND PASSER MONTANUS PALLIDUS ZAR. IN SOUTHERN TURKMENIYA. Zoologicheskii Zhurnal 23: 342-350. TRANS. 207.

Formozov, A. N. 1945. SUPPLEMENTARY REMARKS ON B. M. ZHITKOV'S PAPER: 'NOTES ON RATS AND SOME CONDITIONS OF THEIR STUDY.' Zoologicheskii Zhurnal 24: 126-132. TRANS. 206.

Gal'kov, V. P. 1929. A NEW WAY OF PREPARING PHOSPHORUS PASTE FOR USE IN RODENT CONTROL. Plant Protection, Leningrad, 6: 501-502. TRANS. 189.

Galler, O. 1935. THE PRESENT DAY POSITION OF THE BACTERIOLOGICAL METHOD OF RODENT CONTROL. Rev. Microbiol., Saratov, 14: 441-447. TRANS. 71

Geptner, V. G. 1937. TWENTY YEARS' WORK ON THE SYSTEMATICS AND GEOGRAPHICAL DISTRIBUTION OF MAMMALS IN THE U.S.S.R. (1917-1937). Zoologicheskii Zhurnal 16: 902-915. TRANS. 149.

Grechkin, V. P. 1950. MAMMALS WHICH DAMAGE FOREST PLANTATIONS. Lesn. Khoz. no. 1. 54-57 p. TRANS. 250.

Grikurov, V. S. 1934. ON THE PROBLEM OF THE PRESERVATION OF THE PLAGUE ORGANISM IN AN ENDEMIC FOCUS DURING THE INTER-EPIZOOTIC PERIOD. Rev. Microbiol., Saratov, 13: 207-211. TRANS. 77.

Gubar, V. V., N. M. Dukel'skaya, E. M. Korzinkina, and V. P. Teplov. 1935. THE ECOLOGY OF THE MARMOT [BAIBAK OR BOBAC (MARMOTA BOBAC)] AND MARMOT TRAPPING. All-Union Scientific Research Institute of fur and game industry management, Glavpushnina, NKVT. 89 p. Vneshtorgizdat, Moscow, Leningrad. TRANS. 96.

Isakov, Yu. A. 1945. ON THE PERIODIC IMMUNITY OF FOXES TO ENCEPHALITIS. Bull. Soc. Nat. Moscou, 50(3-4): 72-79. TRANS. 212.

Kaizer, G. A. 1941. RESULTS OF RODENT CENSUS WORK IN THE SOUTH-EAST OF THE U.S.S.R. IN 1939. (Preliminary report). In Symposium: "Rodents and rodent control," no. 1, p. 225-233. From the State Institute of Microbiology and Epidemiology for the Southeast of the U.S.S.R., Saratov. TRANS. 193.

Kalabukhov, N. I. 1935. ON THE CAUSES OF FLUCTUATIONS IN NUMBERS OF MOUSE-LIKE RODENTS. REVIEW OF THE LITERATURE. Zoologicheskii Zhurnal 14(2): 209-42, 6 figs. TRANS. 1.

TRANSLATIONS OF RUSSIAN WILDLIFE LITERATURE--Continued

Kalabukhov, N. I. 1937. PRINCIPLE LAWS OF THE DYNAMICS OF MAMMAL AND BIRD POPULATIONS. Advances in Modern Biology (Uspekhi Sovromennoi Biologii) 7(3): 505-31. TRANS. 26.

Kalabukhov, N. I. 1937. RESULTS OF 20 YEARS' RESEARCH (1917-1937) ON THE ECOLOGY OF RODENT PESTS IN THE USSR. Zoologicheskii Zhurnal 16: 950-71, illus. TRANS. 33.

Kalabukhov, N. 1938. ON ECOLOGICAL CHARACTER OF CLOSELY RELATED SPECIES OF RODENTS. Zoologicheskii Zhurnal 17(3): 521-532. (No trans. no.)

Kalabukhov, N. I. 1938. SOME DATA ON THE EFFECTS OF THE TEMPERATURE OF THE ENVIRONMENT ON GROWTH IN MICE (MUS MUSCULUS L.). Bull. Soc. Nat. Moscou, 47: 218-222. TRANS. 88.

Kalabukhov, N. I. 1939. SOME ECOLOGICAL PECULIARITIES OF CLOSELY RELATED SPECIES OF RODENTS. 3. PECULIARITIES OF THE REACTION OF WOOD-MICE AND YELLOW-NECKED FIELD-MICE (APODEMUS SYLVATICUS L. AND A. FLAVICOLLIS MELCH.) AND OF THE LITTLE GROUND SQUIRREL AND THE SPOTTED GROUND SQUIRREL (CITELLUS PYGMAEUS PALL. AND C. SUSLICA GUELD.) TO THE TEMPERATURE GRADIENT. Zoologicheskii Zhurnal 18(5): 915-23, 2 figs. TRANS. 56.

Kalabukhov, N. I. 1940. THE DAILY CYCLE OF ANIMALS' ACTIVITY. Advances in Modern Biology 12(1): 1-24. TRANS. 87.

Kalabukhov, N. I. 1943. A SYSTEM OF MEASURES FOR RODENT CONTROL IN FOCI OF TULAREMIA. Jour. Microbiology, Epidemiology, and Immunology nos. 7-8. p. 59-66. TRANS. 163.

Kalabukhov, N. I. 1943. THE CONTROL OF MOUSE-LIKE RODENTS TO PREVENT TULARAEMIA. Voenno-Sanitarnoe Delo, no. 10, "Problems connected with protection of the forces from epidemics." p. 41-48. TRANS. 162.

Kalabukhov, N. I. 1946. USE OF ZINC PHOSPHIDE (Zn_3P_2) IN RODENT CONTROL. Pharmacology & Toxicology 9: 53-56. TRANS. 216.

Kalabukhov, N. I., and O. B. Poluzadova. 1946. SOME ECOLOGICO-PHYSIOLOGICAL PECULIARITIES OF THE ARCTIC AND DESERT SPECIES OF FOXES: THE ARCTIC FOX (ALOPEX LAGOPUS L.) AND CORSAC FOX (VULPES CORSAC L.). C. R. Acad. Sci. U.S.S.R. 54(4): 373-376. TRANS. 223.

Khudyakov, I. I., A. D. Fursaev, A. I. Kostina, and E. P. Mikhailova. 1933. ON THE FOOD HABITS OF GROUND SQUIRRELS (CITELLUS PYGMAEUS AND CITELLUS FULVUS) IN NATURAL CONDITIONS IN WEST KAZAKSTAN. Rev. Microbiol., Saratov, 12: 63-74. TRANS. 106.

Kirikov, S. V. 1935. ON THE BROKEN DISTRIBUTION OF EVOTOMYS GLAREOLUS SCHREB. Bull. Soc. Nat. Moscou, 44: 250-252. TRANS. 238.

Kirikov, S. V. 1937. COMPARATIVE ECOLOGICAL SKETCH OF THE SOUTH URAL OAK-AND PINE-WOOD CAPERCAILLIE. Bull. de L'Academie des Sci. l'U.S.S.R., 1: 821-842. TRANS. 95.

Kiris, I. D. 1941. METHODS FOR FORECASTING CHANGES IN POPULATION OF THE COMMON SQUIRREL (SCIURUS VULGARIS L.). In Symposium: Methods for forecasting changes in the numbers of fur-bearing animals and renewing their natural supplies. Trans. Centr. Lab. Biol. & Game-Industry, Zagotzhivsuir'e, Moscow, no. 5. p. 17-34. TRANS. 128. For references, see Trans. 137.

Kolosov, A. M. 1941. REPRODUCTIVE BIOLOGY OF THE COMMON HARE (LEPUS EUROPAEUS PALL.) Zoologicheskii Zhurnal 20(1): 154-172. TRANS. 113.

TRANSLATIONS OF RUSSIAN WILDLIFE LITERATURE--Continued

Kotovshchikova, M. A. 1936. EXAMINATION OF METHODS OF WORK EMPLOYED BY RODENT CENSUS OBSERVATION POSTS. Summary of the Scientific Research Work of the Institute of Plant Protection, Leningrad, 1935. p. 540-542. TRANS. 121.

Kruishtal, A. F. 1934. ON THE ECOLOGY AND AGRICULTURAL IMPORTANCE OF THE MOLE IN THE FOREST-STEPPE WEST OF THE DNEIPER AND IN THE POLESE OF UKRAINE. Zoologicheskii Zhurnal 13(2): 292-310. TRANS. 214.

Kucheruk, V. V. 1945. THE IMPORTANCE OF DIFFERENT MAMMALS IN PLAGUE EPIZOOTICS AND IN THE OCCURRENCE OF CASES OF HUMAN PLAGUE IN THE MONGOL-TRANSBAIKAL PLAGUE FOCUS. Zoologicheskii Zhurnal 24: 309-320, 2 figs. TRANS. 234.

Kucheruk, V. V. 1946. RODENTS THAT OCCUR IN HUMAN DWELLINGS IN EASTERN MONGOLIA. Zoologicheskii Zhurnal 25: 175-183. TRANS. 47.

Kuznetzov, B. A. 1944. KEY TO THE MAMMALS OF THE U.S.S.R. (RODENTIA). p. 262-368. TRANS. 200.

Kuzyakin, A. P. 1935. MATERIAL ON THE BIOLOGY OF THE MOLE (TALPA EUROPEA L.) OF TULA DECIDUOUS FOREST. Bull. Soc. Nat. Moscou, 44: 230-239. TRANS. 210.

Kuzyakin, A. P. 1944. KEY TO THE MAMMALS OF THE U.S.S.R. (BATS). p. 59-108, figs. 15-61. TRANS. 200.

Lavrov, N. P. 1941. METHODS FOR FORECASTING POPULATION CHANGES IN THE ERMINE (MUSTELA ERMINEA L.). In Symposium: Methods for forecasting changes in the numbers of fur-bearing animals and renewing their natural supplies. Trans. Centr. Lab. Biol. & Game-Industry, Zagotzhivsuir'e, Moscow, no. 5. p. 60-77. TRANS. 131. For references, see Trans. 137.

Lavrov, N. P. 1941. PRINCIPLES UNDERLYING AND METHODS FOR INTRODUCING THE MUSKRAT (FIBER ZIBETHICUS L.). Trans. Centr. Lab. Biol. & Game-Industry, Zagotzhivsuir'e, Moscow, no. 5. p. 155-171. TRANS. 135. For references, see Trans. 138.

Lavrov, N. P. 1943. ON THE BIOLOGY OF THE COMMON SHREW (SOREX ARANEUS L.). Zoologicheskii Zhurnal 22(6): 361-365. TRANS. 191.

Lomakina, N. B. 1936. WORKING OUT AND IMPROVING CENSUS METHODS FOR MOUSE-LIKE RODENTS IN FORCING BEDS, RICKS AND BUILDINGS. Summary of the Sci. Research Work of the Institute of Plant Protection, Leningrad, 1935. p. 542-545, 1 fig. TRANS. 54.

Maksimov, A. A. 1945. MIGRATIONS OF THE ARCTIC FOX IN THE NORTH OF THE EUROPEAN PART OF THE U.S.S.R. Bull. Soc. Nat. Moscou, 50(5-6): 45-61, 3 figs. TRANS. 243.

Mikheev, A. V. 1937. CONTRIBUTION TO THE BIOLOGY OF THE WATER VOLE, ARVICOLA TERRESTRIS TERRESTRIS L. Arch. Mus. Zool. Univ. Moscou 4: 3-26. TRANS. 246.

Nasimovich, A. A. 1948. THE BEAVER ON KOLA PENINSULA. Priroda, Moskva, no. 7. p. 60-63. TRANS. 187.

Naumov, N. P. 1934. DETERMINING THE AGE OF THE SQUIRREL (SCIURUS VULGARIS L.). Sci. Repts. Moscow State Univ. no. 2. p. 275-290. TRANS. 182.

Naumov, N. P. 1936. DETERMINING THE AGE OF THE LITTLE GROUND SQUIRREL (CITELLUS PYGMAEUS). Plant Protection, Leningrad, 11: 131-134, 9 figs. TRANS. 60.

TRANSLATIONS OF RUSSIAN WILDLIFE LITERATURE--Continued

Naumov, N. P. 1936. REPRODUCTION AND MORTALITY IN THE COMMON VOLE (MICROTUS ARVALIS PALL.). Abstracts of the Works of the Zoological Institute of Moscow State Univ., no. 3. p. 144-170, 5 figs. TRANS. 13.

Naumov, S. P. 1933. THE SEALS OF THE U.S.S.R. THE RAW MATERIAL BASIS OF THE MARINE MAMMAL FISHERY. All-Union Cooperative Assn. Publ. House, Moscow and Leningrad. 105 p. TRANS. 107.

Naumov, S. P. 1939. WINTER FOOD HABITS OF THE WHITE HARE (LEPUS TIMIDUS L.). Zoologicheskii Zhurnal 18: 1055-1063. TRANS. 98.

Naumov, S. P. 1941. GENERAL QUESTIONS RELATING TO FLUCTUATIONS IN NUMBERS OF MAMMALS AND THE ORGANIZATION OF RESEARCH. In Symposium: Methods for forecasting changes in the numbers of fur-bearing animals and renewing their natural supplies. Trans. Centr. Lab. Biol. & Game-Industry, Zagotzhivsuir'e, Moscow, no. 5. p. 7-17. TRANS. 130. For references, see Trans. 137.

Naumov, S. P. 1941. METHODS FOR FORECASTING POPULATION CHANGES IN THE WHITE HARE (LEPUS TIMIDUS L.). Trans. Centr. Lab. Biol. and Game-Industry, Zagotzhivsuir'e, Moscow, 5: 46-60. TRANS. 127.

Naumov, S. P., N. P. Lavrov, and E. P. Spangenberg. 1935. THE THIN-TOED GROUND SQUIRREL (SPERMOPHILOPSIS LEPTODACTYLUS LICHT.). (In The thin-toed ground squirrel, the fat dormouse, the mole-rat, and the chipmunk.) All-Union Cooperative Assn. Publ. House, Moscow and Leningrad. p. 36-70. TRANS. 93.

Nefedov, N. I. 1943. [THE AGRICULTURAL IMPORTANCE OF THE PARTRIDGE (PERDIX PERDIX L.) ON THE LOWER VOLGA] Zoologicheskii Zhurnal 22: 41-43. TRANS. 183.
In Russian, summary in English.

Novikova, E. I., and G. A. Lalazarov. 1934. ON THE PRESERVATION OF THE PLAGUE BACILLUS IN THE GROUND SQUIRREL'S CARCASS. Rev. Microbiol., Saratov, 13: 53-54. TRANS. 80.

Obolenski, S. I., and N. M. Sokolov. 1931. TESTING CERTAIN POISONS FOR KILLING RATS. Plant Protection, Leningrad, 7: 377-381. TRANS. 69.

Obolenskii, S. I., and N. M. Sokolova. 1929. EXPERIMENTS IN RAT EXTERMINATION WITH CERTAIN POISONS. Plant Protection, Leningrad, 5: 573-577. TRANS. 179.

Obolenskii, S. I. 1927. NEW SUBSTANCES FOR EXTERMINATING MAMMAL PESTS. Plant Protection, Leningrad, 4: 159-161. TRANS. 180.

Parfent'ev, I. A. 1927. STUDY OF THE TOXICITY OF ARSENIC PREPARATIONS FOR RODENTS. Zashchita Rastenii ot Vredetelei 4: 484-507. TRANS. 195.

Paseshnik, A. A. 1946. USE OF BARIUM CARBONATE AND BARIUM SELENITE IN RODENT CONTROL. Trans. Central Sci. Research Disinfection Inst. 1944(2): 94-100. TRANS. 219.

Paseshnik, A. A. 1946. USE OF 'kruisid-TzNIDI' FOR POISONING BROWN RATS. Trans. Central Sci. Research Disinfection Inst. 1944(2): 90-94. TRANS. 218.

Pereleshin, S. D. 1943. THE WINTER DIET OF THE ARCTIC FOX IN YAMAL AREA. Zoologicheskii Zhurnal 22: 299-313. TRANS. 167.

TRANSLATIONS OF RUSSIAN WILDLIFE LITERATURE--Continued

Polikarpov, V. N. 1946. THE PRODUCTION METHOD FOR OBTAINING 'kruisid-TzNIDI' (ALPHA-NAPHTHYL-THIOUREA). Trans. Central Sci. Research Disinfection Inst. 1944(2): 81-84. TRANS. 221.

Polyak, I. M., and V. M. Tumanskii. 1932. SEASONAL CHANGE IN THE COMPOSITION OF FLEAS IN GROUND SQUIRREL BURROWS IN N.-CHIRSK DISTRICT. Rev. Microbiol., Saratov, 11: 285-287. TRANS. 82.

Popov, V. K., and B. Yu. Fal-kenshtein. 1934. METHODS FOR MAKING A MOLE CENSUS AND OBTAINING COEFFICIENTS FOR PLANNING MOLE CATCHING. Problems of Ecology and Biocenology 4: 26-35. TRANS. 86.

Portenko, L. A. 1931. THE PRODUCTIVE POTENTIAL OF THE BIRD FAUNA OF NOVAYA ZEMLYA. Trans. Biol. Geo. Chem. Lab., Acad. Sci. U.S.S.R. Suppl. 2. 52 p. TRANS. 205.

Raevskii, V. V. 1937. CALCULATING THE NUMBERS OF MAMMALS BY THE RINGING METHOD. Zoologicheskii Zhurnal 13: 90-96. TRANS. 97.

Rall', Yu. M. 1932. ON METHODS OF STUDYING THE MICROCLIMATE OF THE GROUND SQUIRREL'S NEST. FIRST REPORT. Rev. Microbiol., Saratov, 11(1): 43-52. TRANS. 42.

Rall', Yu. M. 1936. SOME METHODS OF ECOLOGICAL CENSUS FOR RODENTS. Problems of Ecology & Biocenology 3: 140-57, 1 fig. TRANS. 35.

Rall', Yu. M. 1939. THERMAL CONDITIONS IN THE BURROWS OF SAND RODENTS, AND METHODS OF STUDYING THEM. Zoologicheskii Zhurnal 18(1): 110-119, 9 figs. TRANS. 55.

Rall', Yu. M. 1944. THE FOCALITY OF RODENT PLAGUE IN THE LIGHT OF ECOLOGO-GEOGRAPHICAL IDEAS. Zoologicheskii Zhurnal 23(5): 258-266. TRANS. 224.

Rall', Yu. M. 1945. THE DYNAMIC DENSITY OF RODENTS AND SOME METHODS OF STUDYING IT. Bull. Soc. Nat. Moscou, 50: 62-64. TRANS. 211.

Rall', Yu. M., and M. P. Demyashev. 1934. THE WINTER BURROWS OF CITELLUS PYGMAEUS PALL. AND UTILIZATION OF THEM FOR A SECOND HIBERNATION. Rev. Microbiol., Saratov, 13: 119-128. TRANS. 83.

Rall', Yu. M., A. A. Flegontova, and M. V. Sheikina. 1929. NOTES ON THE BIOLOGY OF THE LITTLE GROUND SQUIRREL (CITELLUS PYGMAEUS PALL.) IN PLAGUE ENDEMIC AND PLAGUE-FREE AREAS OF WEST KAZAKHSTAN. Rev. Microbiol., Saratov, 12(2): 139-150. TRANS. 41.

Romanova, V. K. 1936. DISTRIBUTION OF GROUND SQUIRRELS IN THE STEPPES OF CISCAUCASIA. Summary of the Scientific Research Work of the Institute of Plant Protection, Leningrad, 1935. p. 43-45. TRANS. 120.

Rukovskii, N. N. 1948. THE EXPERIMENT OF INTRODUCING THE BEAVER INTO ASTRAKHAN PROVINCE. Priroda, Moskva, no. 6. p. 65-66. TRANS. 122.

Ryabov, N. I. 1940. DATA ON THE ECOLOGY OF THE WOODMOUSE (APODEMUS SYLVATICUS L.) AND THE PINE MOUSE (PITYMYS MAJORI THOS.) IN THE CAUCASUS. Miscellany of Sci. Works by Biologists of the Young Communist League at the A. N. Severtzov Lab. of Evol. Biol., Acad. Sci. U.S.S.R., Moscow, p. 129-138. TRANS. 233.

TRANSLATIONS OF RUSSIAN WILDLIFE LITERATURE--Continued

Sdobnikov, V. M. 1935. RELATIONS BETWEEN THE REINDEER AND ANIMAL LIFE OF THE TUNDRA AND FOREST. Trans. Arctic Inst., Leningrad, 24: 5-66, 5 figs., 1934 (1935). TRANS. 125.
In Russian, summary in English.

Severtzov, S. A. 1935. REPRODUCTIVE ECOLOGY. 3. RESULTS OF WORK DONE IN 1932. Zoologicheskii Zhurnal 14: 371-396. TRANS. 90.

Shaposhnikov, L. V. 1939. NEW DATA ON ESTABLISHMENT OF THE NUTRIA IN THE U.S.S.R. Bull. Soc. Nat. Moscou, 48(1): 65-73. TRANS. 116.

Shaposhnikov, L. V. 1941. MAIN CONSIDERATIONS IN AND METHODS FOR INTRODUCING THE SKUNK (MEPHITIS MEPHITIS SCHREB.) INTO THE U.S.S.R. Trans. Centr. Lab. Biol. & Game-Industry, Zagotzhivsuir'e, Moscow, no. 5. 207-211. TRANS. 136. For references, see Trans. 138.

Shaposhnikov, L. V. 1941. THE MAIN PRINCIPLES UNDERLYING METHODS FOR INCREASING THE SUPPLIES OF FUR-BEARING ANIMALS BY INTRODUCING THEM INTO NEW AREAS. Trans. Centr. Lab. Biol. & Game-Industry, Zagotzhivsuir'e, Moscow, no. 5. 129-138. TRANS. 134. For references, see Trans. 138.

Shiperovich, V. Ya. 1939. THE SOIL AND TREE FAUNA OF DIFFERENT TYPES OF FOREST IN 'BUZULUK PINE FOREST' RESERVE. Zoologicheskii Zhurnal 18: 196-211. TRANS. 185.

Spangenberg, E. P. 1935. THE FAT DORMOUSE (GLIS GLIS L.). (In The thin-toed ground-squirrel, the fat dormouse, the mole-rat, and the chipmunk.) All-Union Cooperative Assn. Publ. House, Moscow and Leningrad. p. 36-70, map, illus. TRANS. 108.

Stepanov, I. V. 1946. MATERIAL ON THE REPRODUCTIVE BIOLOGY OF RATS AND MICE AT BATUMI. Bull. Soc. Nat. Moscou, 51(6): 29-35, 4 figs. TRANS. 186.

Stupnitzkii, P. N., and I. S. Tinker. 1933. ON A MICROBE ISOLATED FROM GROUND SQUIRRELS IN CONDITIONS OF SPONTANEOUS EPIZOOTIC. Rev. Microbiol., Saratov, 12(3): 167-174. TRANS. 66.

Suknev, V. V., V. A. Chizhova, and E. L. Kazantzeva. 1933. ON THE STREPTOCOCCAL EPIZOOTIC AMONG MICE IN THE NORTHERN CAUCASUS IN 1932-33. Rev. Microbiol., Saratov, 12: 175-182. TRANS. 68.

Sviridenki, P. A. 1934. INCREASE AND DECREASE IN THE NUMBERS OF MOUSE-LIKE RODENTS. Bull. Pl. Prot. Leningrad, Ser. 4 (Vertebrates), no. 3. p. 1-60, 5 figs. TRANS. 37.

Sviridenko, P. A. 1940. THE FOOD HABITS OF MOUSE-LIKE RODENTS AND THEIR EFFECT ON FOREST REGENERATION. Zoologicheskii Zhurnal, 19: 680-703. TRANS. 144.

Sviridenko, P. A. 1943. THE ECOLOGICAL FACTORS RESPONSIBLE FOR THE GEOGRAPHICAL DISTRIBUTION AND EURYTOPY OF THE FIELD-MOUSE (APODEMUS AGRARIUS). Zoologicheskii Zhurnal 22: 280-298, 11 figs. TRANS. 203.

Sviridenko, P. A. 1944. RODENTS AS ROBBERS OF FOREST SEED. Zoologicheskii Zhurnal 23: 170-180. TRANS. 229.

Sviridenko, P. A. 1945. THE EFFECT OF MAN'S ACTIVITIES IN INCREASING AND DECREASING THE NUMBERS OF FOREST MOUSE-LIKE RODENTS. Zoologicheskii Zhurnal 24(6): 347-360. TRANS. 228.

TRANSLATIONS OF RUSSIAN WILDLIFE LITERATURE--Continued

Teplov, V. P. 1943. THE IMPORTANCE OF THE COMMON SHREW (SOREX ARANEUS L.) AND SOME OTHER MAMMALS IN THE DIET OF THE GRAYLING (THYMALLUS THYMALLUS L.). Zoologicheskii Zhurnal 22(6): 366-368. TRANS. 190.

Tumanskii, V. M. 1935. ON THE BEGINNING OF SPONTANEOUS PLAGUE EPIZOOTICS IN GROUND SQUIRRELS (CITELLUS PYGMAEUS PALL.), AND THEIR COURSE. Rev. Microbiol., Saratov, 14: 419-424. TRANS. 78.

Varshavskii, S. N. 1937. LAWS GOVERNING THE SEASONAL MIGRATIONS OF MOUSE-LIKE RODENTS. Zoologicheskii Zhurnal 16: 362-392. TRANS. 89.

Varshavskii, S. N. 1938. FLUCTUATIONS IN THE FERTILITY OF THE LITTLE GROUND SQUIRREL (CITELLUS PYGMAEUS PALL.) Plant Protection, Leningrad, 17: 3-13. TRANS. 109.

Vashkov, V. X. 1946. THE SELECTIVE TOXIC EFFECT OF 'kruisid-TzNIDI' (ALPHA-NAPHTHYL-THIOUREA) ON CERTAIN ANIMALS. Trans. Central Sci. Research Disinfection Inst. 1944(2): 84-90. TRANS. 220.

Vereshchagin, N. K. 1941. ESTABLISHMENT OF THE NUTRIA (MYOCASTOR COYPUS MOL.) IN WEST GEORGIA. Travaux de l'Institutude Zoologie de l'Academe des Sciences de la R.S.S.G., 4: 3-42. TRANS. 166.

Vol'Fertz, A. 1935. TULAREMIA. Rev. Microbiol., Saratov, 14: 183-197. TRANS. 73.

Yanushevich, A. I. 1939. THE GAME-INDUSTRY ZONES OF WEST SIBERIA REGION. Transactions of the Biological Institute of Tomsk V. V. Kuibuishev State Univ. 6: 159-174, map. TRANS. 123.

Yanushko, P. A. 1938. THE MORTALITY OF VOLES (MICROTUS ARVALIS) IN NATURAL CONDITIONS IN THE STEPPE DISTRICTS OF CISCAUCASIA AND THE EXTENT TO WHICH IT IS AFFECTED BY PREDATORS. Zoologicheskii Zhurnal 17(1): 102-111. TRANS. 112.

Zalesskii, I. M., and M. D. Zverev. 1935. THE CHIPMUNK (EUTAMIAS ASIATICUS). (In The thin-toed ground squirrel, the fat dormouse, the mole-rat, and the chipmunk.) All-Union Cooperative Assn. Publ. House, Moscow and Leningrad. p. 80-102. TRANS. 141.

Zarring, I. I. 1928. ON THE SOLUBILITY OF ARSENIC TRIOXIDE. Plant Protection, Leningrad, 5: 241-243. TRANS. 178.

Zasukhin, D., and V. Tiflov. 1932. ENTO- AND ECTO-PARASITES OF THE STEPPE GROUND SQUIRREL, CITELLUS PYGMAEUS PALL. Rev. Microbiol., Saratov, 11: 129-132. TRANS. 81.

Zasukhin, D. N., V. E. Tiflov, and R. E. Shul'tz. 1932. ENDO- AND ECTO-PARASITES OF THE WATER-VOLE, ARVICOLA AMPHIBIUS L., 1758, REPORT 2. Rev. Microbiol., Saratov, 13: 85-86. TRANS. 10.

Zenkevich, L. A. 1937. PROGRESS IN THE STUDY OF THE MARINE FAUNA OF THE U.S.S.R. MADE IN TWENTY YEARS. Zoologicheskii Zhurnal 16: 830-870. TRANS. 154.

Zhitkov, B. M. 1944. REMARKS ON RATS AND CERTAIN CONDITIONS TO BE OBSERVED IN STUDYING THEM. Zoologicheskii Zhurnal 23: 91-97. TRANS. 230.

Zograf', N. 1934. AN ATTEMPT TO EXPLAIN THE ORIGIN OF THE FAUNA OF THE LAKES OF EUROPEAN RUSSIA. Bull. Acad. Sci. St. Petersburg 3: 173-191. TRANS. 204.

AUTHOR INDEX

	Page
Adams, Charles S.	77
Adlam, G. H.	28
Aizenshtadt, D. S.	90
Aldrich, John W.	76
Alikina, V. E.	90
Allen, Durward L.	15
Allen, Ralph H., Jr.	17
Allen, Robert P.	76,78
Allen, Ross	79
Allred, B. W.	86
Amadon, Dean	61
Ames, C. T.	29
Anderson, Chester	47
Anderson, John M.	69
Anderson, Maurice	69
Anderson, Roy C.	69
Antonovskii, A. I.	90
Argiropulo, A. P.	90
Armour, C. J.	33
Armstrong, Edward A.	58
Armstrong, G. C.	50
Babenuishev, V. P.	90
Babero, Bert B.	13
Baer, Jean G.	83
Bailey, R. Wayne	37,41,68
Bailey, Robert E.	58
Bailey, Wayne	17
Baker, Rollin H.	27
Baker, Theodore C.	47
Baldwin, Paul H.	78
Bancroft, T. A.	77
Banfield, A. W. F.	26
Bank, Theodore P., II	84
Barabash-Nikiforov, I. I.	90
Baranovskaya, T. N.	90
Barbehenn, Kile	22
Barker, Elliott S.	2
Barnes, Irston R.	78
Bartholomew, George A., Jr.	54
Barruel, Paul	57
Bashenina, N. V.	91
Baxter, Evelyn V.	60
Beach, Frank A.	9
Becker, Kurt	35
Bell, J. G.	73
Bell, Ronald O.	18
Bellrose, Frank C.	70
Bendell, J. F. S.	16
Bennett, G. F.	71
Benoit, J.	57
Berger, N. M.	91
Berner, Lester M.	50
Bigelow, Henry B.	82
Bird, Rex L.	19
Bischoff, Arthur L.	75
Black, John D.	10
Black, C. T.	18
Blagosklonov, K. N.	91
Blair, W. Frank	79
Blake, Charles H.	57
Blouch, Ralph I.	63
Bobrinskii, N. A.	91
Boeker, Hal M.	76
Bogusch, Edwin R.	86
Bonn, Edward W.	79
Booth, Ernest S.	33
Borror, Donald J.	57
Boyce, Stephen G.	84
Boyd, Elizabeth M.	78
Bragg, Arthur N.	79
Brent, Homer	53
Bridges, Henry P.	15
Brooks, James W.	54
Bross, Irwin J.	6
Brouwer, G. A.	61
Brueckner, A. L.	31
Buell, Noble E.	23
Burcalow, Donald W.	51
Burger, George V.	68
Burger, J. Wendell	58
Burnett, Wayne D.	51
Buss, Irven O.	65
Cade, Tom	78
Cagle, Fred R.	79
Camin, J. H.	79
Carlander, Kenneth D.	83
Carnie, S. Kent	78
Caswell, Edwin B.	65
Chaney, Allan H.	79
Chatelain, Edward F.	47,49
Chirkova, A. F.	91
Chizhova, V. A.	92,98
Church, B. M.	32
Clapper, Louis S.	50
Clark, F. Bryan	85
Clark, Philip J.	28
Clark, Wilson F.	40
Clarke, C. H. D.	62
Cliff, Frank S.	82
Clover, Melvin R.	51
Cole, LaMont C.	13
Collins, B. D.	74
Collins, George L.	9
Colman, E. A.	87
Cooch, Graham	70
Cook, Arthur H.	37
Cott, Hugh B.	57
Courter, Robert D.	30
Cowan, Ian McTaggart	15
Critcher, T. Stuart	76
Cross, R. H., Jr.	10
Crowcroft, Peter	30
Cruickshank, Allan D.	60
Cullen, J. M.	58
Cummings, Edmund G.	68
Curtis, J. T.	8
Dahl, Herbert	32
Daily, Fay Kenoyer	86
Dalquest, Walter W.	27
Dana, Samuel T.	2

	Page
Danilov, D. N.	91
Darling, F. Fraser	48
Darling, Jay N.	8
Davenport, L. A.	51
Davies, A. W.	9
Davies, D. M.	71
Davis, David E.	6,32,36
Davis, Kingsley	87
Davis, W. B.	27
Dawbin, W. H.	54
Delacour, Jean	63
Delaney, Marie M.	6
Demyashev, M. P.	91,92,97
Derr, H. J.	33
Dewey, Edward R.	6
Dice, Lee R.	28
Dmitrevskaya, N. A.	91
Doan, K. H.	54
Dodge, John E.	4
Dolman, C. E.	13
Donahue, Wm. H.	84
Dorney, Robert S.	41,66
Doudoroff, Peter	3
Douglas, C. W.	54
Douglas, James R.	52
Drake, Harold	33
Dreis, Robert E.	70
Dresser, Cleveland van	70,71
Duck, Les	87
Duellman, William E.	80
Dukel'skaya, N. M.	91,93
Dunaeva, T. N.	91
Dunkeson, Robert L.	51
Durell, Jim	19
Durrant, Stephen D.	36
Dushinske, R. L.	71
Dutton, Pete	22
Eadie, W. Robert	29
East, Ben	71
Eberhard, Thomas	45
Eberhardt, L. L.	63
Egler, Frank E.	16
Egorov, A. N.	92
Elkins, W. A.	16,40
Ellison, Lincoln	86
Elton, C. S.	45
Endsley, J. R.	80
Engle, James W., Jr.	38
Erickson, Arnold B.	51
Errington, Paul L.	13
Essapian, Frank S.	55
Evanko, Anthony B.	20
Evseeva, V. E.	92
Ewing, Howard E.	73
Eyster, Marshall B.	58
Fal'kenshtein, B. Yu.	92,97
Fallis, A. M.	71
Fantham, H. B.	80
Farner, D. S.	58
Fashingbauer, Bernard A.	71
Fay, Francis H.	30
Fay, Marcus Joseph	84
Fedorova, T. V.	92
Fenyuk, B. K.	92
Fetisov, A. S.	92
Findley, James S.	27
Firsov, I. P.	92
Fischer, Bob	63
Fisher, K. C.	29
Fisher, Ralph A., Sr.	16
Fitch, Frank W., Jr.	62
Fitch, Henry S.	28,56
Flegontova, A. A.	97
Fleming, Rose E.	68
Foley, Donald	72
Folitarek, S.	92
Ford, Clellan S.	9
Formozov, A. N.	93
Fowle, C. D.	16
Friley, Charles E., Jr.	64
Frings, Hubert	58
Fuller, William A.	38
Fursaev, A. D.	94
Gabrielson, Ira N.	8,57,72
Gal'kov, V. P.	93
Galler, O.	93
Gallizioli, Steve	43
Gamble, Bill	52
Gates, F. C.	2
Gaughran, George R. L.	30
Gavin, Angus	72
Geptner, V. G.	93
Gill, John	52
Glasgow, Leslie L.	21,76
Godfrey, Gillian K.	34
Goldston, E. F., and others	89
Goodman, John D.	80
Goodpaster, Woodrow W.	34
Gordon, Eva L.	4
Gordon, Robert E.	79
Grange, Wallace Byron	32
Grechkin, V. P.	93
Greene, H. C.	8
Griffin, D. R.	26,59
Griffith, Richard E.	43
Grikurov, V. S.	93
Griscom, Ludlow	57
Gubar, V. V.	93
Guiguet, C. J.	11
Gunther, Lloyd	73
Haartman, Lars von	59
Habermann, R. T.	36
Hadland, George S.	4
Hagar, Joseph A.	72
Hakala, John B.	38
Halazon, George C.	66
Hale, James B.	2,66
Halloran, Arthur F.	47
Hamilton, W. J., Jr.	80
Handley, Delmar	72
Hansen, Richard M.	36
Hanson, Harold C.	59,66,68
Hardy, Frederick C.	66
Harmon, William Z.	77

	Page
Harrar, J. G.	88
Harrington, H. D.	84
Harris, John T.	47
Harwood, P. D.	83
Haugen, Arnold O.	62
Hawkins, Ann	80
Hawkins, Arthur S.	77
Helm, Wm. T.	22
Hensley, M. Max	60
Henze, Otto	21
Herman, C. M.	42,75
Hickey, Joseph J.	13
Hinde, Howard P.	86
Hines, L. G.	88
Hock, Raymond J.	41
Hoffmeister, Donald F.	34
Hollister, J. Murray	38
Hollom, P. A. D.	61
Holweg, Arthur W.	38
Homeyer, P. G.	77
Hooper, David C.	73
Horner, Elizabeth B.	34
Horsfall, Frank, Jr.	34
Howard, Walter E.	23
Howell, Thelma	80
Huber, William W.	4
Hudson, George E.	60
Hulsey, Andrew	14
Hungerford, Kenneth E.	67
Hunt, E. G.	74
Hunt, George S.	73
Hutchinson, G. E.	13
Ingles, Lloyd G.	34
Ingram, William M.	3
Irving, Laurence	26
Irving, S. D.	58
Isakov, Yu. A.	93
Jacob, F. H.	32
Jahn, L. R.	73
Jameson, David L.	80
Jeffrey, Lela May	55
Jenkins, J. H.	11
Jennings, William S.	47
Johnson, Don	18
Johnson, H. M.	26
Johnson, Ned K.	78
Jones, Gardiner	53
Jones, J. Knox, Jr.	27
Jones, John C.	14
Jones, Robert D., Jr.	43
Jordahl, Harold C., Jr.	43
Judd, W. W.	80
Jumber, Joseph	58
Kabat, C.	39
Kaikow, Julius	4
Kainer, Robert A.	43
Kaizer, G. A.	93
Kalabukhov, N. I.	93,94
Kalmbach, E. R.	61
Kazantzeva, E. L.	98
Kearns, Chester M.	52
Kellner, William C.	42
Kelsall, John P.	48
Kemsies, Emerson	61
Kendrick, Herbert	44
Kennamer, Earl Franklin	44
Khudyakov, I. I.	94
Kiel, William H., Jr.	77
Kieran, John	85
Kilham, L.	42
Kimball, James W.	73
Kirikov, S. V.	94
Kiris, I. D.	94
Kitchens, Jim	21
Klonglan, Eugene D.	64
Knoder, C. E.	69
Kolosov, A. M.	90,94
Korzinkina, E. M.	93
Kossack, C. W.	68
Kostina, A. I.	94
Kotovshchikova, M. A.	95
Kowalski, K.	30
Kozicky, E. L.	77
Kruishtal, A. F.	95
Krutzsch, Philip H.	30,35
Kucheruk, V. V.	91,95
Kuznetzov, B. A.	91,95
Kuzyakin, A. P.	91,95
Lack, David	13
Lalazarov, G. A.	96
Langford, E. V.	28
Langlois, Thomas H.	11
Latham, Roger M.	23,67
Lavrov, N. P.	91,95,96
Lay, Daniel W.	62
Laycock, William H.	35
Lee, Forrest B.	73
Lee, James A.	74
Legler, Eugene, Jr.	62
Lehmann, V. W.	63
Leighty, R. G.	89
Lemke, Charles W.	32
Lemon, Carroll	48
Leonardis, Salvatore de.	67
Leopold, A. Starker	48
Levin, Oscar R.	41
Levine, N. D.	68,74
Light, S. F.	83
Limstrom, G. A.	3
Linduska, Joseph P.	74
Lively, Charles E.	4
Lloyd, Hoyes	57
Lomakina, N. B.	95
Longhurst, William M.	52
Lord, G. H.	39
Lory, Earl C.	47
Low, Jessop B.	39
Lowdermilk, W. C.	88
Ludeman, John	35
Lukaszewicz, Karol	48
Lyon, L. Jack	64
Maciolek, John A.	22
MacMullan, R. A.	64
MacNamara, L. G.	22

	Page
Madson, John	52
Maguire, H. F.	52
Mair, W. Winston	74
Maksimov, A. A.	95
Mann, Wm. F., Jr.	33
Mansueti, Romeo	33,43
Markus, Rudolfo	84
Marshall, Ethel	5
Marshall, Hubert	16
Marshall, William H.	13,19
Martin, Alexander C.	46
Martof, Bernard	81
Matson, J. R.	41
Mattison, Helmer	66
Maunton, Edward R.	37
McArdle, Richard E.	88
McCarley, W. H.	79
McConkey, Edwin H.	81
McCabe, Robert A.	5
McKay, Douglas	25,88
McLean, D. D.	45
Mecham, John S.	81
Mewaldt, L. R.	58
Mikhailova, E. P.	94
Mikheev, A. V.	95
Miller, A. W.	74
Miller, Alden H.	59,78
Miller, John T.	89
Miller, Malcolm R.	81
Milne, Lorus J.	9
Milne, Margery J.	9
Milstead, W. W.	81
Miner, Roy Waldo	10
Miyazaki, Ichiro	55
Moe, Robert	14
Mohler, Levi L.	64
Moody, Raymond D.	21
Moore, Clifford B.	5,81
Moran, P. A. P.	13,45
Moravets, F. L.	85
Morris, Melvin S.	47
Mosby, Henry S.	81
Moski, Henry, Jr.	81
Moulton, James M.	81
Mountfort, Guy	61
Murdy, Ray	69
Murphy, Dean A.	51
Murphy, Robert Cushman	61
Murie, Olaus J.	46
Musgrove, Jack W.	74
Musgrove, Mary R.	74
Nasimovich, A. A.	95
Naumov, N. P.	95,96
Naumov, S. P.	96
Naylor, A. E.	74
Nefedov, N. I.	96
Neill, Wilfred T.	79,81
Nelson, Frank P.	69
Norris, Kenneth S.	31
Novikova, E. I.	96
Obolenski, S. I.	96
Obolenskii, S. I.	96
Ogden, Eugene C.	87
Olds, Hayden W.	75
Oliver, James A.	81
Ordway, Samuel H., Jr.	88
Orr, Robert T.	30
Osborne, Douglas	48
Overton, W. Scott, Jr.	7
Palmer, T. S.	3
Palmer, Walter L.	67
Parfent'ev, I. A.	96
Parker, Kenneth W.	86
Paseshnik, A. A.	96
Patric, Earl F.	38
Patton, Fred	48
Paulian, Patrice	55
Pearson, J. C.	71
Pearson, Oliver P.	81
Pereleshin, S. D.	96
Peterson, Elmer T.	88
Peterson, Randolph L.	33,36
Peterson, Roger Tory	61
Petrides, George A.	63
Pettus, David	79
Phelps, Chester F.	18
Pillmore, Richard E.	48
Pimlott, Douglas H.	49
Pissot, Henry J.	85
Polder, Emmett	27
Polikarpov, V. N.	97
Poluzadova, O. B.	94
Polyak, I. M.	97
Poole, Earl L.	43
Popov, V. K.	97
Portenko, L. A.	97
Porter, Annie	80
Pough, Richard H.	61
Presnall, Clifford C.	46
Price, Myfanwy	30
Pruitt, William O., Jr.	30,31
Pulley, T. E.	83
Putnam, L. S.	69
Quay, Thomas L.	68,76
Quay, Wilber B.	35
Quick, Horace F.	44
Raevskii, V. V.	97
Rall', Yu. M.	97
Randle, Worth	61
Rawley, Ed.	38
Reagan, R. L.	31
Redmond, Howard R.	36
Reed, Clyde F.	85
Reeder, William G.	31
Reese, Carl R.	57
Reid, Vincent H.	63
Remington, Jack D.	40
Reynolds, H. C.	56
Reynolds, J. K.	33
Ricker, W. E.	13
Rintoul, Leonora J.	60
Riordan, Laurence E.	21
Robertson, Jos. H.	6
Robertson, Robert Blackwood	55

	Page
Robertson, William B.	84
Robins, J. P.	55
Rodeck, Hugo G.	27
Romanova, V. K.	97
Rosen, Merton N.	75
Rowan, Wm.	13
Rowland, John B.	6
Rudd, Robert L.	14
Rudolph, Foster	89
Rukovskii, N. N.	97
Russell, R. J.	27
Rutherford, Robert M.	26
Ruttner, Franz	11
Ryabov, N. I.	97
Ryckman, R. E.	29
St. Amant, Lyle S.	21
Salt, W. Ray	59
Salter, Robert M.	19
Sampson, Frank W.	23
Sanborn, Colin Campbell	31
Sanders, Ottys	82
Sanderson, Glen C.	38
Sandidge, Lewis L.	56
Sather, J. Henry	39
Saults, Dan	5
Savage, Jay M.	82
Scatterday, James E.	31
Scheffer, Victor B.	55
Schemnitz, Sanford D.	68
Schierbaum, Donald	75
Schildman, George	53
Schiller, E. L.	29,44
Schottelius, Byron A.	65
Schroeder, William C.	82
Schull, Herman W., Jr.	8
Schul'tz, R. E.	99
Schultz, Vincent	14,44,46,67
Schulz, William F., Jr.	17
Schwartz, Albert	35
Schwartzkopff, J.	59
Scott, Robert F.	49
Sdobnikov, V. M.	98
Selye, Hans	10
Seubert, John L.	65
Severinghaus, C. W.	52
Severtzov, S. A.	98
Shaffer, C. H.	20
Shapley, Harlow	88
Shaposhnikov, L. V.	98
Shaw, Charles E.	81
Sheikina, M. V.	92,97
Sheldon, William G.	77
Sherman, H. B.	42
Shindorf, E. C.	44
Shiperovich, V. Ya.	98
Shmeleva, A. A.	92
Shriner, Joan	78
Siivonen, Lauri	13
Simmons, C. S.	89
Slobodkin, L. Basil	7
Smith, Eldon H.	65
Smith, Hobart M.	82
Sokolov, N. M.	96
Sokolova, N. M.	96
Soper, J. Dewey	27
Spangenberg, E. P.	96,98
Spencer, David L.	49
Spencer, Howard E., Jr.	75
Spurr, Stephen H.	9
Squillace, A. E.	36
Stackpole, Edouard A.	56
Stearman, R. L.	7
Stebbings, E. L.	49
Steen, M. O.	20
Stegeman, LeRoy C.	31
Stein, Hilda A.	82
Stepanov, I. V.	98
Stephens, Chester	19
Stephenson, Anne	12
Stephenson, T. A.	12
Stevens, W. E.	39
Stewart, Paul A.	69
Stewart, Robert E.	77
Stickel, Lucille F.	28
Stille, W. T.	82
Stockstad, D. S.	47
Stombaugh, Tom Atkins	35
Stratton, G. Burder	3
Stuart, George R.	82
Stupnitzkii, P. N.	98
Sturkie, Paul D.	59
Sumner, Lowell	7,9
Suknev, V. V.	98
Sviridenki, P. A.	98
Sviridenko, P. A.	98
Swank, Wendell	52
Swenson, G. A.	89
Swift, Ernest	5,75
Switzenberg, D. F.	51
Talmage, Everett	75
Taylor, Arthur E.	89
Taylor, Walter P.	42
Teplov, V. P.	93,99
Thomas, Earl M.	40
Thompson, Daniel Q.	35
Thompson, H. V.	32,33
Thompson, Seton H.	56
Thompson, William Lay	61
Thornton, J. Fred	46
Thornton, Philip L.	6
Thorp, W. T. S.	36
Thrapp, Dan Lincoln	49
Threinen, C. W.	22
Tiflov, V. E.	99
Tilden, Freeman	9
Tinbergen, Niko	59
Tinker, I. S.	98
Titus, Harold	18
Todd, A. C.	39
Todd, A. S., Jr.	7
Tordoff, Harrison B.	78,79
Trautman, Carl G.	65
Tremaine, Marie	3
Triplehorn, C. A.	79
Tryon, C. A., Jr.	22
Tufts, Nathan	89

	Page
Tumanskii, V. M.	97,99
Turbott, E. G.	56
Tyndale-Biscoe, C. H.	33
Tyron, E. H.	84
Udy, Jay R.	49
Van Etten, Robert C.	51
Van Riper, Walker	82
Varshavskii, S. N.	99
Vashkov, V. X.	99
Vereshchagin, N. K.	99
Vibe, Christian	45
Vickers, Marjorie A.	71
Villa R., Bernardo	27
Vol'Fertz, A.	99
Vos, A. de	50
Wagar, J. V. K.	17
Wagner, Fred H.	65
Wagner, Helmuth O.	28
Walker, Ernest P.	31
Wallmo, O. C.	43
Walter, H. J.	79
Ward, Peter	77
Ward, T. G.	7
Watson, J. S.	33
Weaver, Howard E.	5
Webb, William L.	38,39
Webster, Clark G.	75
Webster, R. Ann	7
Wehr, Everett E.	75
Welch, Jack F.	29
Wendt, Robert F.	66
Westell, Casey E., Jr.	53
Westermann, J. H.	12
Weyer, Edward M., Jr.	12
[White, Andrew J. (quoted)]	20
White, John A.	37
White, Keith L.	23
Whitehead, G. Kenneth	53
Whitlock, Ralph	57
Widrig, T. M.	7
Wiedorn, William S.	56
Wight, Howard M.	58,69
Wildermuth, Robert	89
Wilke, Ford	55
Wilkinson, D. H.	60
Williams, C. B.	7
Williams, F. P.	36
Williams, George G.	58
Wilson, Chester S.	5
Wilson, Kenneth A.	44
Winston, Frank A.	69
Wolfson, Albert	58,60
Wood, John T.	80
Woodbury, Angus M.	82
Woodfield, Frank	41
Woodward, Hugh B.	89
Wooten, William H.	76
Wojtusiak, R. J.	30
Worden, Alastair	9
Worrell, Albert C.	7
Wynne-Edwards, V. C.	12
Yanushevich, A. I.	99
Yanushko, P. A.	99
Yeager, Lee E.	21
Yocom, Charles F.	60
Young, Howard	14
Young, Robert J.	16
Zalesskii, I. M.	99
Zarring, I. I.	99
Zasukhin, D.	99
Zelkevich, L. A.	99
Zhitkov, B. M.	99
Zippin, Calvin	6
Zograf', N.	99
Zverev, M. D.	99
Zwickel, Fred	53

INT.-DUP. SEC., WASH., D.C. 63196